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ABSTRACT

This curriculum guide was written to provide information on the skills covered in the Maryland Functional Math Test (MFMT) and to outline a process which will allow teachers to fully integrate computer software into their instruction. The materials produced in this directory are designed to assist mild to moderately handicapped students who will take the MFMT, but may also be helpful to regular education students who are experiencing difficulty with the test. The first section, "Domain Directory," lists 30 objectives divided into seven domains on the MFMT. The content scope, question format, teaching strategy, vocabulary, common errors, and task analysis are provided for each of the objectives. The second section, "Assessment Materials," contains tests, answer keys, and skill sheets. The skill sheets are organized by domains, corresponding objectives, and skills. The last section, "Software Materials," provides the software matrices relating specific skills to software programs and a summary reviewing the programs. Appendices include: (1) "MFMT Vocabulary List"; (2) "Student Progress Sheet"; (3) "Computer Software"; (4) "Suggested Assessment Modifications"; (5) "Guidelines for Parents"; (6) "Additional Resources and Supplementary Materials"; and (7) "MFMT List of Domains, Objectives, and Skills." (YP)

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INTEGRATING COMPUTER SOFTWARE INTO THE FUNCTIONAL MATHEMATICS CURRICULUM: A DIAGNOSTIC APPROACH

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A SPECIAL EDUCATION INSTRUCTIONAL GUIDE

SPRING 1989

Prince George's County Public Schools
14201 School Lane
Upper Marlboro, Maryland 20772

John A. Murphy, Superintendent of Schools

SE 051 013

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* NOTE: Simplify Fractions is not a separate part of the MFMT.

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They are organized: first, by domain; secondly, by corresponding objectives; and finally, by skill.

For example:

- Pretest/Posttest: NUMBER CONCEPTS
  - Diagnostic Evaluation: Write Numbers in Words and Digits
    - Skill Sheet: Identify place value
    - Skill Sheet: Identify word names one through nineteen
    - (Additional Skill Sheets)
  - Diagnostic Evaluation: Rename Fractions as Percents
    - Skill Sheet: Recall from memory 1/3 = 33 1/3% and 2/3 = 66 2/3%
    - Skill Sheet: Rename fractions as percents
  - Diagnostic Evaluation: Rename Percents as Decimals
    - Skill Sheet: Identify the correct location of a decimal point
    - Skill Sheet: Identify the left direction
    - Skill Sheet: Rename percents as decimals
  - Diagnostic Evaluation: Order Decimals
    - Skill Sheet: Write numbers in a column according to the decimal place
    - Skill Sheet: Identify the smallest in a group of numbers
    - Skill Sheet: Arrange a group of numbers from least to greatest
- Pretest/Posttest: WHOLE NUMBER OPERATIONS
  - Diagnostic Evaluation: Add Whole Numbers
    - Skill Sheet: Recall addition number facts
    - Skill Sheet: Add two numbers with up to 2 digits each, no regrouping
    - (Additional Skill Sheets)
  - Diagnostic Evaluation: Subtract Whole Numbers

(This organizational scheme is followed throughout assessment for the seven domains.)

III. SOFTWARE MATERIALS

1. SOFTWARE MATRICES

The software matrices are organized by domain, objective, and skill as they appear in the Domain Directory.

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A. MFMT VOCABULARY LIST

B. STUDENT PROGRESS SHEET

C. COMPUTER SOFTWARE

D. SUGGESTED ASSESSMENT MODIFICATIONS

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PREFACE

The purpose of this directory is to provide information on the skills covered in the Maryland Functional Math Test (MFMT), and to outline a process which allows teachers to fully integrate computer software into their instructional approach to the test.

In order to use this document, schools must have Apple II computers and a variety of the computer software listed in APPENDIX C.

MFMT FACTS

- The Maryland Functional Math Test consists of 77 questions. Students must pass a certain number of questions, currently 58, which varies from year to year, depending upon the results of "census" testing. Ten questions are field test, not operational, items which are being tested for their validity for future test questions.

- Seventh graders take a form of the test for practice in the fall. Beginning in ninth grade, it is given every fall and spring so that students can take it twice a year until they pass. A summer testing opportunity is available for students who have taken the specially designed summer school course.

- The test is not timed; a student can take as long as necessary to finish.

- Handicapped students with Individualized Educational Plans (IEPs) may have test modifications written into their IEPs. The ARD Committee determines which, if any, test modifications are needed. The following are some of the possible modifications:

    - The test may be read to a student having difficulty with the reading, but vocabulary in the test may not be defined.

    - Problems may be worked in the test booklet if necessary.

    - Domains may be broken up and given to the student after pre-teaching each separate domain.

    See APPENDIX D for an outline of suggested modifications developed by the MarylandState Department of Education (MSDE).

PLEASE NOTE:

- The materials produced in this directory are meant to assist mild to moderately handicapped students who will take the MFMT. The materials may also be helpful to regular education high school students who are experiencing difficulty passing the MFMT.

- The supplemental instructional materials contained in APPENDIX F do not always correlate exactly with items on the test. We hope that teachers teach beyond the boundaries of the test in areas they think are important to their students.

- The strategies given in the Domain Directory sometimes surpass the content scope of the test so that students do not become confused later on. (See the strategy for dividing decimals.)

- It is assumed that teachers will recognize that basic math fact skills (addition, subtraction, multiplication, and division facts) are part of the task analysis of many of the objectives even though they have not been repeated under the task analysis. These same skills are part of tasks required for using software successfully but will not be listed as such. If students are experiencing difficulty with basic math facts, teachers should refer to the domain Whole Number Operations.

- Many special education teachers feel that students must master the basic arithmetic operations (addition, subtraction, multiplication, and division) before moving on to other areas. This issue is being debated even among regular education mathematics teachers. The current feeling is that students need to develop problem solving strategies and the use of technology and calculators will assist them with the basic operations. We urge special education teachers to teach in all areas of the functional mathematics curriculum. Some students may not be able to master each domain, but they can learn some of the skills involved in each.

- We suggest that you encourage teachers in other content areas to support parts of the MFMT instruction. Teachers of science, social studies, etc. should use the same strategies for teaching tables, graphs, formulas, etc. English teachers can be asked to reinforce the vocabulary used in the test which can be found in APPENDIX A. Physical education teachers can reinforce Objective 5.1.1 Find the Average of a Set of Numbers as this objective is used to find averages in sports events.

INTRODUCTION

This curriculum document includes the following sections:

- I. **Domain Directory**
- II. **Assessment Materials**
- III. **Software Materials**
- **Appendices**

I. The **Domain Directory** is divided according to the seven domains on the Maryland Functional Math Test (MFMT). Each domain is further divided into objectives which are reviewed according to the following:

- **Content Scope**
- **Question Format**
- **Strategy**
- **Vocabulary**
- **Common Errors**
- **Task Analysis (Skills)**

The **Content Scope** gives the parameters of the test items under each objective according to the Project Basic Instructional Guide, Volume V, Functional Mathematics published by the Maryland State Department of Education.

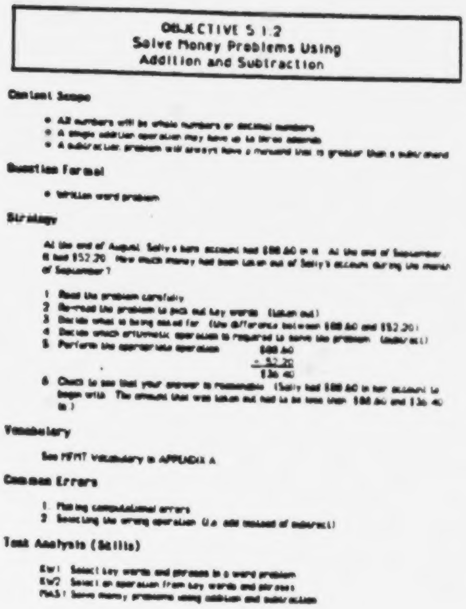
The **Question Format** gives the physical layout and any particular vocabulary that is used in the question. Examples of test items appear either within the Question Format or the Strategy. All items on the test are multiple choice with four possible answers.

A teaching **Strategy** is given for each objective. In some cases, more than one strategy is given. We want to meet the needs of both the intensive resource room teacher who may need a very simplified strategy as well as the multi-level math teacher who may wish to use a more difficult strategy that fits in with the rest of his curriculum.

Vocabulary is listed with an asterisk (*) preceding those words which actually do appear on the test. It is not necessary for the teacher to teach all of the vocabulary since some words may be conveyed in simpler terms (i.e. top number instead of numerator). Since word problems contain such a diverse vocabulary, a list has been compiled and placed in APPENDIX A.

Common Errors provides examples of problems students may encounter within each objective. Teachers should be aware of these problems since they will hinder the success of the student taking the MFMT.

A **Task Analysis (Skills)** has been compiled for each objective. It is assumed that teachers will recognize that basic math facts (addition, subtraction, multiplication, and division facts) are part of many of the objectives. If students are having problems with basic math facts, teachers should refer to the section on Whole Number Operations which deals in depth with basic math facts.



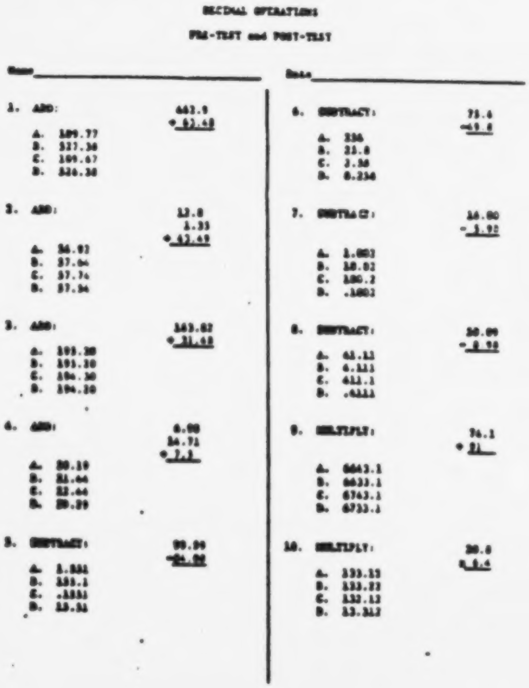
OBJECTIVE 5.1.2
Solve Money Problems Using
Addition and Subtraction

Fig. 1 Domain Directory

II. The **Assessment Materials** consist of:

Pretests/Posttests and Answer Keys
Diagnostic Evaluations and Answer Keys
Skill Sheets

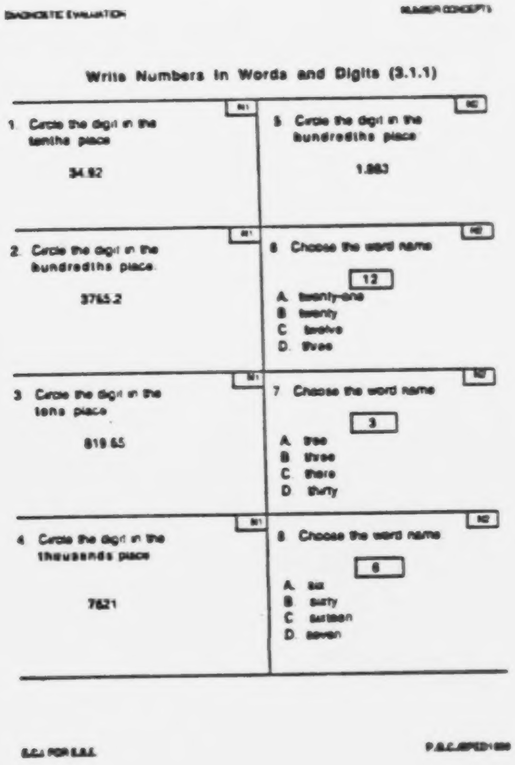
The **Pretests/Posttests (by Domain)** were taken from Harford County Public Schools and are multiple choice test items for each of the domains. By giving the pretest, the teacher will be able to narrow down the particular objective within that domain that a student may need to work on.



DECIMAL OPERATIONS
PRE-TEST and POST-TEST

Fig. 2 Pretest/Posttest

The **Diagnostic Evaluation (by Objective)** is given to the student once a domain has been narrowed to a particular objective. Each item on the Diagnostic Evaluation is correlated to one of the skills in the Task Analysis for that objective. By further narrowing the tasks the student is having difficulty with, the teacher will know the particular skills the student needs to work on. After the skill(s) has been identified, the teacher will need to help the student develop that skill. Then the teacher can check the Software Matrix to see what software is available for that skill.



DIAGNOSTIC EVALUATION NUMBER CONCEPTS

Write Numbers in Words and Digits (3.1.1)

1. Circle the digit in the tenths place

34.92

2. Circle the digit in the hundredths place.

3765.2

3. Circle the digit in the tens place

819.65

4. Circle the digit in the thousands place

7621

5. Circle the digit in the hundredths place

1.983

6. Choose the word name

12

A. twenty-one
B. twenty
C. twelve
D. three

7. Choose the word name

3

A. tree
B. three
C. there
D. thirty

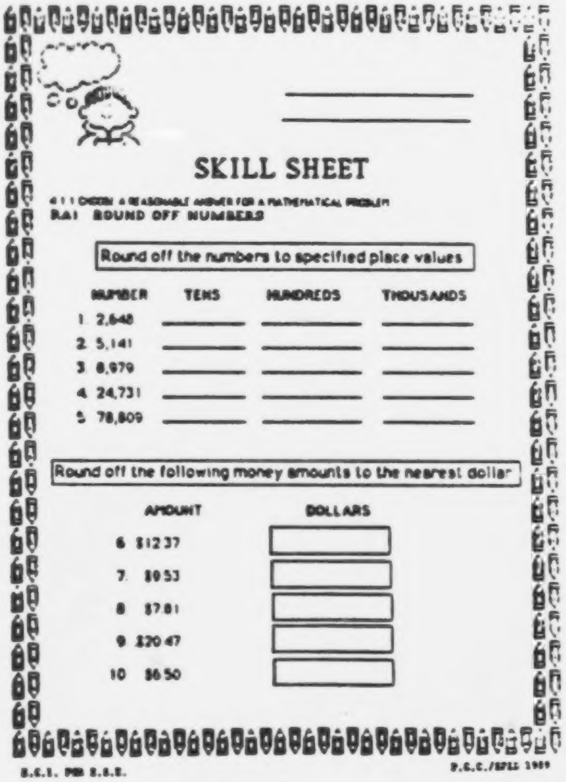
8. Choose the word name

6

A. six
B. sixty
C. sixteen
D. seven

E.C.I. FOR E.S.E. P.G.C./SPED 1989

Fig. 3 Diagnostic Evaluation



SKILL SHEET

4.1.1 CHOOSE A REASONABLE ANSWER FOR A MATHEMATICAL PROBLEM
RA1 ROUND OFF NUMBERS

Round off the numbers to specified place values

NUMBER	TENS	HUNDREDS	THOUSANDS
1. 2,640			
2. 5,141			
3. 8,979			
4. 24,731			
5. 78,809			

Round off the following money amounts to the nearest dollar

AMOUNT	DOLLARS
6. $12.37	
7. $9.53	
8. $7.81	
9. $20.47	
10. $6.50	

E.C.I. FOR E.S.E. P.G.C./SPED 1989

Fig. 4 Skill Sheet

The **Skill Sheet (by Skill)** is designed as a "test" to see if the student is mastering the skill he/she is working on. Since only one Skill Sheet is provided for each skill, the teacher may need to develop more. Blank sheets are provided for this purpose.

III. The **Software Materials** consist of:

Software Matrices
Software Summaries

The **Software Matrices** correlate each skill in the task analysis to an activity in a software program (where software is available).

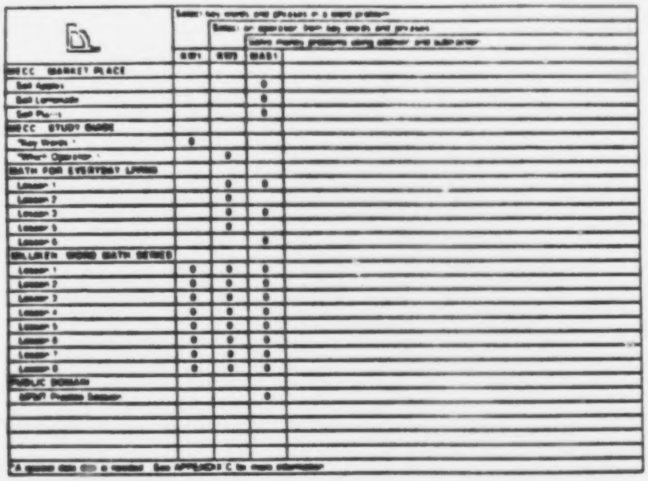


Fig. 5 Software Matrix

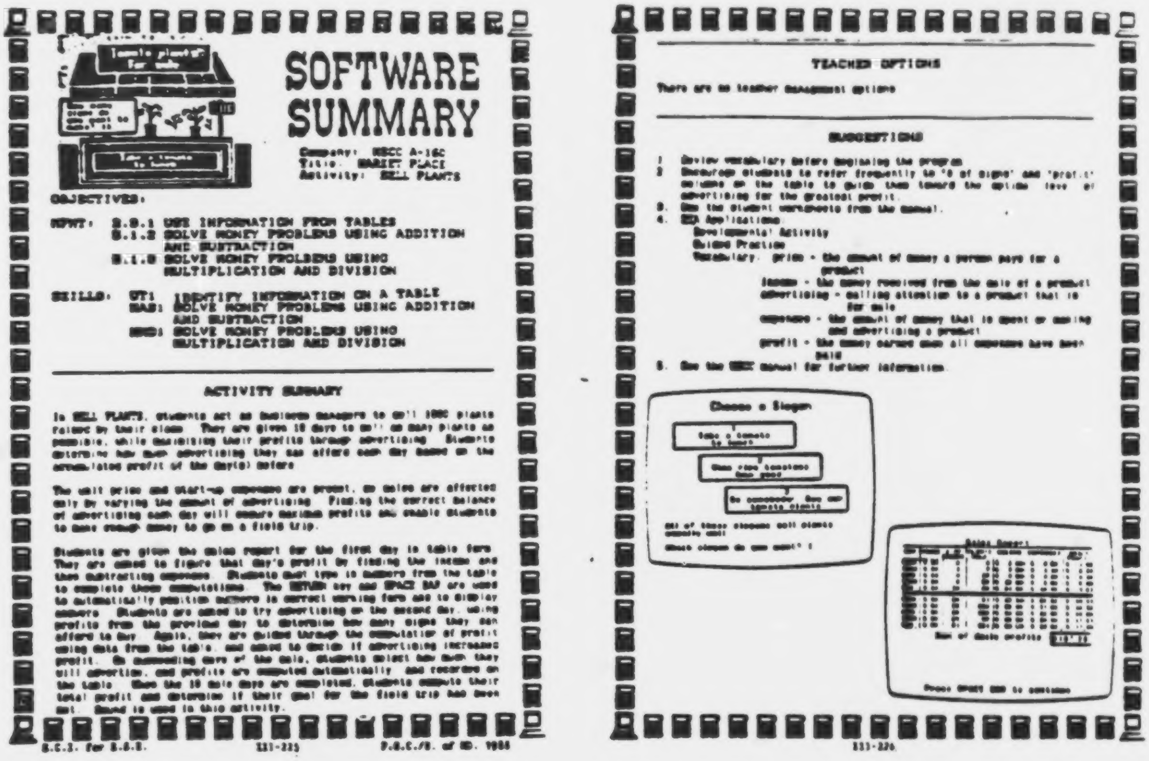
The **Software Summaries** provide valuable information on the software programs. Each activity within a program is given a separate summary with the following information:

Activity Summary
Teacher Options
Suggestions

The **Activity Summary** describes the content scope of the activity and any strategy used. It is fundamental that teachers read the summaries to note these strategies and see if they correlate to the way they have taught the material. If the strategy is unfamiliar to the student, he may become confused.

Teacher Options explains any modifications that can be made to the activity and how these modifications are accomplished. It notes how to turn the sound on and off. It also tells whether student scores are kept on the disk or not and how to access these scores and print them out if possible.

Suggestions help the teacher to use the software in the best possible way with the following information: specific disk modifications (if possible), where the software fits into the Directed Teaching Activity, supplementary materials that might be helpful, ways of record keeping, etc.



SOFTWARE SUMMARY

Company: MECC A-160
Title: MARKET PLACE
Activity: SELL PLANTS

OBJECTIVES:

MPWT: 2.0.1 USE INFORMATION FROM TABLES
5.1.2 SOLVE MONEY PROBLEMS USING ADDITION AND SUBTRACTION
5.1.3 SOLVE MONEY PROBLEMS USING MULTIPLICATION AND DIVISION

SKILLS: UT1 IDENTIFY INFORMATION ON A TABLE
MAS: SOLVE MONEY PROBLEMS USING ADDITION AND SUBTRACTION
MMD: SOLVE MONEY PROBLEMS USING MULTIPLICATION AND DIVISION

ACTIVITY SUMMARY

E.C.I. for E.S.E. III-225

TEACHER OPTIONS

There are no teacher management options

SUGGESTIONS

1 Review vocabulary before beginning the program
2 Encourage students to refer frequently to '# of signs' and 'profit' columns on the table to guide them toward the optimum level of advertising for the greatest profit.
3. Use the student worksheets from the manual.
4. DTA Applications:
  Developmental Activity
  Guided Practice
  Vocabulary: price - the amount of money a person pays for a product
    income - the money received from the sale of a product
    advertising - calling attention to a product that is for sale
    expenses - the amount of money that is spent on making and advertising a product
    profit - the money earned when all expenses have been paid
5. See the MECC manual for further information.

III-226

Fig. 6 Software Summary

The **APPENDICES** include the following useful information:

- **MFMT Vocabulary List**
- **Student Progress Sheet**
- **Computer Software**
- **Suggested Assessment Modifications**
- **Guidelines for Parents**
- **Additional Resources and Supplementary Materials**
- **MFMT List of Domains, Objectives, and Skills**

The **MFMT Vocabulary List** is a compilation of words that might be used in the test. Actual words used on the test have an asterisk. It is not necessary for students to know all of these words, but it may be helpful if they are familiar with them.

The **Student Progress Sheet** provides teachers with a means of keeping track of student progress on the Pretests, Diagnostic Evaluations, software activities, and Skill Sheets.

The **Computer Software** is a listing of all software used in the Software Summaries and their corresponding publishing companies.

The **Suggested Assessment Modifications** charts Maryland Functional Test modification by handicapping condition and is put out by the MSDE.

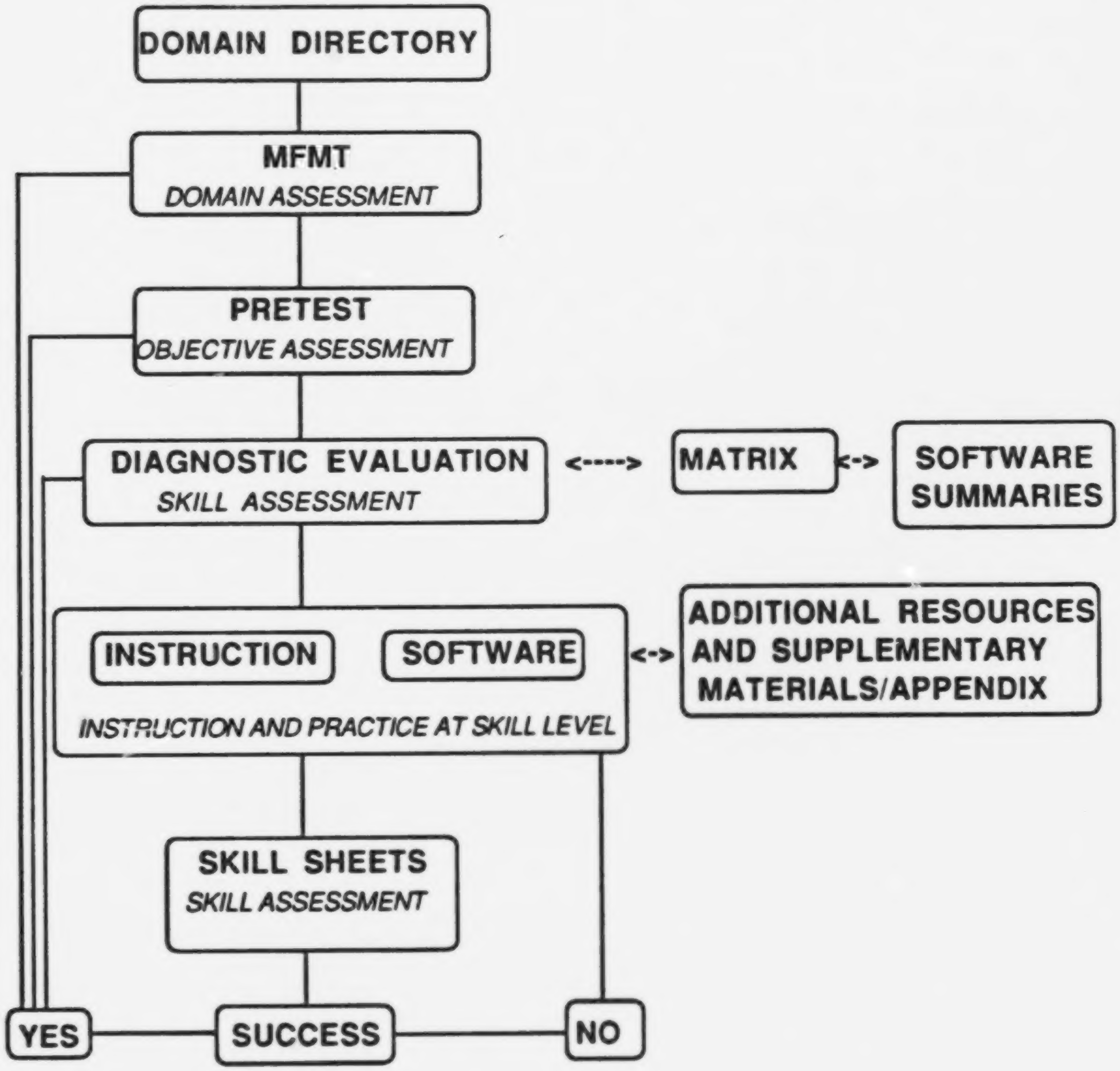
Guidelines for Parents gives teachers two different handouts that can be duplicated for parents to help their children pass the MFMT.

The **Additional Resources and Supplementary Materials** include materials that were used to produce this math package as well as materials specifically designed for the MFMT that can supplement what has been provided here.

The **MFMT List of Domains, Objectives, and Skills** includes the domains and objectives as listed by the MSDE as well as the task analysis of skills that was done for this project.

INTEGRATING COMPUTER SOFTWARE INTO THE FUNCTIONAL MATHEMATICS CURRICULUM: A DIAGNOSTIC APPROACH

THE PROCESS


DOMAIN DIRECTORY
MFMT
DOMAIN ASSESSMENT
PRETEST
OBJECTIVE ASSESSMENT
DIAGNOSTIC EVALUATION
SKILL ASSESSMENT
<----->
MATRIX
<->
SOFTWARE SUMMARIES
INSTRUCTION
SOFTWARE
INSTRUCTION AND PRACTICE AT SKILL LEVEL
<->
ADDITIONAL RESOURCES AND SUPPLEMENTARY MATERIALS/APPENDIX
SKILL SHEETS
SKILL ASSESSMENT
YES
SUCCESS
NO

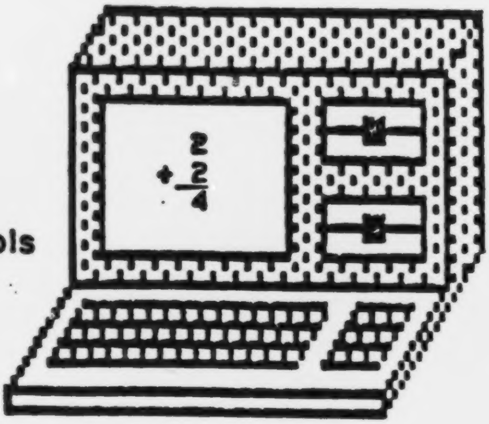
INTEGRATING COMPUTER SOFTWARE INTO THE FUNCTIONAL MATHEMATICS CURRICULUM: A DIAGNOSTIC APPROACH

SECTION ONE

DOMAIN DIRECTORY

Effective Computer Instruction
for
Effective Special Education

Prince George's County Public Schools
Department of Special Education
1989



DOMAIN 1
NUMBER CONCEPTS

OBJECTIVE 3.1.1
Write Numbers in Words and Digits

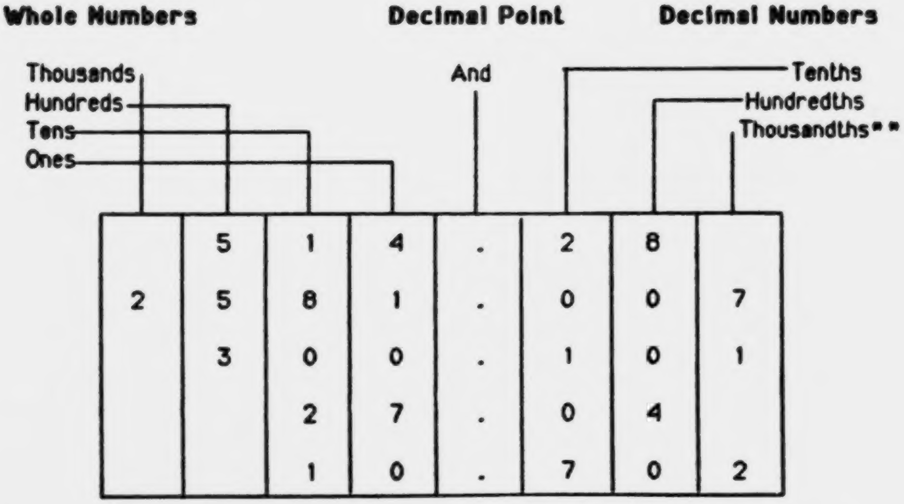
Content Scope

- Problems consist of numbers .01 - 1,000

Question Format

- Choose the number name
- Choose the word name

Strategy



Whole Numbers **Decimal Point** **Decimal Numbers**

Thousands	Hundreds	Tens	Ones	And	Tenths	Hundredths	Thousandths**
	5	1	4	.	2	8	
2	5	8	1	.	0	0	7
	3	0	0	.	1	0	1
		2	7	.	0	4	
		1	0	.	7	0	2

Each number has a certain value depending on its place in relation to the decimal point.

** Thousandths extend beyond the MFMT requirements.

1. Read or write whole numbers.
   Each number to the left of the decimal point is a whole number and is read as a whole number.

   Example: 514.28

   514 is read: five hundred fourteen. (The 5 is in the hundreds column, the 1 is in the tens column~~, and the 4 is in~~ the ones column on the chart.)

2. Read or write decimal numbers.
   Each number to the right of the decimal point is a decimal number and is read as a whole number followed by the place value name.

   Example: .28

   .28 is read: twenty-eight hundredths. (The 2 is in the tenths column; the 8 is in the hundredths column on the chart).

3. Read the decimal point as "and".
   The decimal point is read as "and" if there is a whole number in front of the decimal point.

   Example: 514.28

   514.28 is read: five hundred fourteen "and" twenty-eight hundredths.

Vocabulary

- Number words: one through nineteen
  twenty, thirty, forty...ninety
  hundred, thousand
  tenths, hundredths
  twenty-one through ninety-nine

Decimal

Common Errors

1. Assigning incorrect place value
   1,401 —> one thousand forty-one
2. Omitting the "ths" at the end of a decimal number
   .03 —> three hundreds
3. Omitting a zero place holder in number form
   Sixteen and two hundredths —> 16.2
4. Using the word "and " in whole numbers after a place name
   1,560 —> one thousand five hundred and sixty
5. Omitting the word "and" expressing the decimal point
   1.5 —> one five tenths

Task Analysis (Skills)

N1 Identify place value
N2 Identify word names for one through nineteen
N3 Write digits for words one through nineteen
N4 Identify word names for 20, 30, 40...90
N5 Write digits for words twenty, thirty, forty...ninety
N6 Identify hyphenated number words for 21, 22, 23...99
N7 Write digits for hyphenated number words from twenty-one through ninety-nine
N8 Identify the word names for 100 and 1,000
N9 Write the digits for hundred and thousand
N10 Identify the word names tenths and hundredths from the digits (.1 and .01)
N11 Write the digits for tenths and hundredths
N12 Recognize that "and" represents the decimal point
N13 Write numbers in words and digits

OBJECTIVE 3.1.2
Rename Fractions as Percents

Content Scope

- Proper fractions with denominators 2, 3, 4, 5, 10

Question Format

- Rename (1/2) as a percent

Strategy

I. Strategy A

1. Write the fraction. $\frac{1}{2}$
2. Write = P/100. $\frac{1}{2} = \frac{P}{100}$
3. Draw an X. $\frac{1}{2} \times \frac{P}{100}$
4. Multiply the connected numbers. 1 x 100 = 100
5. Divide the answer by remaining number. $\begin{array}{r} 50 \\ 2\overline{)100} \end{array}$
6. Rewrite the answer with a percent symbol. 50%

II. Strategy B

Treat fractions and percents as facts to be memorized.

1/2 = 50%
1/3 = 33 1/3%   2/3 = 66 2/3%
1/4 = 25%   3/4 = 75%
1/5 = 20%   2/5 = 40%
3/5 = 60%   4/5 = 80%
1/10 = 10%   3/10 = 30%
7/10 = 70%   9/10 = 90%

NOTE: The above fractions and percents include all possible ones on the MFMT.

Vocabulary

* Rename
* Percent
* %
Numerator--the top number in a fraction
Denominator--the bottom number in a fraction

Common Errors

1. Multiplying denominators across instead of diagonally
2. Making arithmetic fact errors
3. Failing to write the fractions (for remainders) in simplest terms

Task Analysis (Skills)

P1 Recall from memory 1/3 = 33 1/3% and 2/3 = 66 2/3%
P2 Rename fractions as percents

OBJECTIVE 3.1.3
Rename Percents as Decimals

Content Scope

- 1% to 100% with no fractional parts

Question Format

- Rename (20%) as a decimal

Strategy

1. Write the number without the % sign. (20% --> 20)
2. Put the decimal point to the right of the last digit. (20.)
3. Move the decimal point 2 places to the left (if necessary insert a zero). (.20)

Vocabulary

- Rename
- Decimal
- %
  Percent

Common Errors

1. Initially putting the decimal point to the left rather than to the right
   25% --> .25 --> .0025
2. Misplacing the decimal by moving to the right
   25% --> 2500.
3. Failing to move the decimal the desired two places
   25% --> 2.5
4. Failing to insert a zero if necessary
   5% --> .5

Task Analysis (Skills)

PD1 Identify the correct location of a decimal point
PD2 Identify the left direction
PD3 Rename percents as decimals

OBJECTIVE 3.3.1
Order Decimals

Content Scope

- Hundreds to thousandths place

Question Format

- Arrange the following numbers in order from least to greatest.

57.1, 57.09, 57.57, 57.07

A. 57.09, 57.07, 57.57, 57.1
B. 57.07, 57.09, 57.1, 57.57
C. 57.09, 57.1, 57.57, 57.07
D. 57.57, 57.07, 57.1, 57.09

Strategy

1. Write the numbers in a column lining up the decimals.

57.1
57.09
57.57
57.07

2. Fill in the blank spaces with zeros.

57.10
57.09
57.57
57.07

3. Ignore the decimals and treat the numbers as whole numbers.

5710
5709
5757
5707

4. Write the numbers from least to greatest.

5707, 5709, 5710, 5757

5. Write as decimal numbers from least to greatest.

57.07, 57.09, 57.10, 57.57

Vocabulary

- * Least
- * Greatest
- * Order
- Decimal

Common Errors

1. Comparing decimals as if they were whole numbers
   Compare .059 and 0.12.
   Student compares 59 and 12 and concludes 0.059 is larger than 0.12.
2. Writing numbers from greatest to least
3. Not aligning the numbers correctly
4. Not using all the given numbers

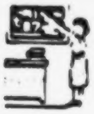
Task Analysis (Skills)

OD1 Write numbers in a column according to the decimal place
Example: 26.1, 87.08, 56.9, 88.53 becomes 26.1
87.08
56.9
88.53

OD2 Identify the smallest in a group of numbers
Example: 2610, 8708, 5690, 8853
smallest is 2610

OD3 Arrange a group of numbers from least to greatest
Example: 2610, 5690, 8708, 8853

DOMAIN 2
WHOLE NUMBER OPERATIONS



OBJECTIVE 2.1.1
Add Whole Numbers

Content Scope

- Problems consist of two 3- to 5-digit numbers or three 2- to 4-digit numbers
- One or two regroupings may be required

Question Format

- Vertical

Add:	Add:
3647	345
+ 256	20
	+ 417

Strategy

The Basic Computational Strategy

1. Add numbers in ones column from top to bottom.

	thousands	hundreds	tens	ones
	3	6	4	7
+		2	5	6
				$^{1}3$

2. Carry tens to tens column.

	thousands	hundreds	tens	ones
			1	
	3	6	4	7
+		2	5	6
				3

3. Add tens column.

	thousands	hundreds	tens	ones
			1	
	3	6	4	7
+		2	5	6
			$^{1}0$	3

4. Repeat with hundreds and thousands columns.

	thousands	hundreds	tens	ones
		1	1	
	3	6	4	7
+		2	5	6
	3	9	0	3

5. Check work by adding each column from bottom to top.

Low-Stress Algorithm

A low-stress algorithm is available which translates long and multi-digit addition problems into a series of simple addition fact problems. SEE APPENDIX F FOR FURTHER INFORMATION.

Vocabulary

- Add
  Addend—one of the numbers added
  Sum—the answer to an addition problem

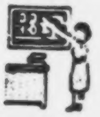
Common Errors

1. Failing to carry
2. Carrying when not necessary
3. Carrying wrong number
4. Making errors in number facts
5. Misaligning digits

Task Analysis (Skills)

A1 Recall addition number facts
A2 Add two numbers with up to 2 digits each, no regrouping
A3 Add two numbers with up to 3 or 4 digits each, no regrouping
A4 Add three 1-digit numbers
A5 Add three numbers with up to 2 digits each, no regrouping
A6 Add two numbers with up to 2 digits each, regrouping ones to tens
A7 Add two numbers with up to 3 or 4 digits each, regrouping ones to tens
A8 Add two numbers with up to 3 digits each, regrouping tens to hundreds
A9 Add two numbers with up to 3 digits each, 1 or 2 regroupings
* A11 Add three numbers with up to 2 digits each, regrouping
A12 Add three numbers with up to 3 or 4 digits each, regrouping

* This skill may extend beyond MFMT requirements by requiring more than two regroupings.



OBJECTIVE 2.1.2
Subtract Whole Numbers

Content Scope

- Problems consist of two 3 to 5 digit numbers
- Zero to two regroupings may be required

Question Format

- Vertical

Subtract: 6705 −3561

Subtract: 30047 −7738

Strategy

The Basic Computational Strategy

1. Begin at the right hand column.

2. Look at the top and bottom numbers in the column.

   Is the top number the same or larger than the bottom number?

IF YES:

A. Subtract the bottom number from from the top

$$\begin{array}{cc} \text{tens} & \text{ones} \\ 5 & 6 \\ -2 & 4 \\ \hline & 2 \end{array}$$

B. Repeat.

$$\begin{array}{cc} \text{tens} & \text{ones} \\ 5 & 6 \\ -2 & 4 \\ \hline 3 & 2 \end{array}$$

IF NO:

A. Borrow from the next column to the left

$$\begin{array}{cc} \text{tens} & \text{ones} \\ 4 & 1 \\ \cancel{5} & 4 \\ -2 & 6 \\ \hline & \end{array}$$

B. Subtract the bottom number from the new number.

$$\begin{array}{cc} \text{tens} & \text{ones} \\ 4 & 1 \\ \cancel{5} & 4 \\ -2 & 6 \\ \hline & 8 \end{array}$$

C. Repeat.

$$\begin{array}{cc} \text{tens} & \text{ones} \\ 4 & 1 \\ \cancel{5} & 4 \\ -2 & 6 \\ \hline 2 & 8 \end{array}$$

Low-Stress Algorithm

A low-stress algorithm is available which adds structure to the process of subtracting and borrowing. SEE APPENDIX F FOR FURTHER INFORMATION.

Vocabulary

* Subtract
Minuend--the top number in a subtraction problem
Subtrahend--the bottom number, the number taken away from the minuend

Common Errors

1. Failing to borrow
2. Making errors in number facts
3. Misaligning digits
4. Using the incorrect operation
5. Switching operations to avoid borrowing (adding instead of subtracting)
6. Subtracting the top number from the bottom number to avoid borrowing

Task Analysis (Skills)

S1 Recall subtraction number facts
S2 Subtract two numbers with up to 2 digits each, no regrouping
S3 Subtract two numbers with up to 3 digits each, no regrouping
S4 Subtract two numbers with up to 2 digits each, regrouping tens to ones
S5 Subtract two numbers with up to 3 digits each, regrouping tens to ones
S6 Subtract two numbers with up to 3 digits each, regrouping hundreds to tens
S7 Subtract two numbers with up to 3 digits each, regrouping to tens or ones
S8 Subtract two numbers with up to 3 digits each, one or two regroupings
** S9 Subtract two numbers with up to 4 digits each, one to three regroupings
** S10 Subtract two numbers with up to 5 digits each, one to four regroupings

** These skills extend beyond MFMT requirements by including problems requiring more than two regroupings

OBJECTIVE 2.1.3
Multiply Whole Numbers

Content Scope

- Problems consist of a 2 or 3 digit number (multiplicand) multiplied by a 1 or 2 digit number (multiplier)
- Regrouping may be required in both multiplication and addition portions of problems

Question Format

- Vertical

Multiply:

37
X 6

Multiply:

395
X 28

Strategy

The Basic Computational Strategy

1 For problems with a 1-digit bottom number (multiplier):

237
X 2

A. Multiply the bottom number times the ones digit. Carry if needed.

1
237
X 2
4

2 X 7 = 14
"Put down the 4 and carry the 1."

B. Multiply the bottom number times the tens digit, and add the carried number, if any.

$$\begin{array}{r} 1 \\ 237 \\ \underline{\times\ \ \ 2} \\ 74 \end{array} \qquad \begin{array}{l} 2 \times 3 = 6 \\ 6 + 1 = 7 \end{array}$$

C. Repeat with the hundreds column.

$$\begin{array}{r} 1 \\ 237 \\ \underline{\times\ \ \ 2} \\ 474 \end{array} \qquad 2 \times 2 = 4$$

2. For problems with a 2-digit bottom number (multiplier).

$$\begin{array}{r} 237 \\ \underline{\times\ 42} \end{array}$$

A. Multiply the bottom ones digit times the top number (as with the 1-digit multiplier).

$$\begin{array}{r} 1 \\ 237 \\ \underline{\times\ 42} \\ 474 \end{array}$$

This first step comprises the entire strategy for a 1-digit bottom number.

B. Write zero as a place holder.

$$\begin{array}{r} 237 \\ \underline{\times\ 42} \\ 474 \\ 0 \end{array}$$

C. Multiply the bottom tens digit times the top number (as with the 1-digit multiplier, but shifted one digit to the left.

$$\begin{array}{r} 12 \\ 237 \\ \underline{\times\ 42} \\ 474 \\ 9480 \end{array}$$

D. Add. Carry if needed.

$$\begin{array}{r} 237 \\ \underline{\times\ 42} \\ 1 \\ 474 \\ \underline{9480} \\ 9954 \end{array}$$

Low-Stress Algorithm

A Low-Stress Algorithm is available which uses a "drop" notation in multiplication. Processes of carrying may be easier in this approach. SEE APPENDIX F FOR FURTHER INFORMATION.

Using a Matrix

Another alternative strategy for 1- and 2-digit multipliers, Using a Matrix, can be found in A Learning Strategies Approach to Functional Mathematics for Students with Special Needs. SEE APPENDIX F FOR FURTHER INFORMATION.

Vocabulary

* Multiply
Multiplicand--the top number in a multiplication problem
Multiplier--the bottom number in a multiplication problem
Product or Final Product--the answer to a multiplication problem
Partial Product--the result of multiplying the multiplicand (top number) by one digit in the multiplier (bottom number)

232	multiplicand
X 34	multiplier
928	partial product
6960	partial product
7888	final product

Common Errors

1. Misaligning partial products
2. Making errors in multiplication facts
3. Making errors in addition facts

Task Analysis (Skills)

M1 Recall multiplication number facts
M2 Multiply 1-digit bottom number times 2-digit top number, no regrouping
** M3 Multiply 1-digit bottom number times 3 or 4-digit top number, no regrouping
M4 Multiply 1-digit bottom number times 2-digit top number, regrouping
** M5 Multiply 1-digit bottom number times 3 or 4-digit top number, regrouping
M6 Multiply 2-digit bottom number times 2-digit top number, regrouping
** M7 Multiply 2-digit bottom number times up to 4-digit top number, regrouping

** These skills may extend beyond MFMT requirements by using a miltiplicand larger than 3 digits.

OBJECTIVE 2.1.4
Divide Whole Numbers

Content Scope

- Problems consist of a 1 or 2 digit divisor divided into a 3 or 4 digit dividend
- No remainders are produced

Question Format

- Division Box

Divide: $8\overline{)5648}$

Divide: $47\overline{)5405}$

Strategy

The Basic Computational Strategy

1. For problems containing a 1-digit divisor:

A. Estimate the number of times the divisor is contained in the first digit.

$$\begin{array}{r} 0 \\ 9\overline{)513} \end{array}$$

How many 9's are contained in 5?

B. Multiply the divisor by the number estimated.

$$\begin{array}{r} 0 \\ 9\overline{)513} \\ 0 \end{array}$$

0 X 9 = 0

C. Subtract from the first digit.

$$\begin{array}{r} 0 \\ 9\overline{)513} \\ \underline{0} \\ 5 \end{array}$$

5 - 0 = 5

D. Bring down the next digit.

```
  0
9)513
  0
  51
```

E. Repeat.

```
  05         Estimate
9)513
  0
  51
  45          Multiply
   63         Subtract
              Bring down
```

```
  057        Estimate
9)513
  0
  51
  45
   63
   63         Multiply
    0         Subtract
```

2. For problems containing a 2-digit divisor:

A. Estimate the number of times the divisor is contained in the first digit.

```
    0
19)513          How many 19's are contained in 5?
```

B. Multiply the divisor by the number estimated.

```
    0
19)513
    0           0 X 19 = 0
```

C. Subtract from the first digit.

```
    0
19)513
    0
    5           5 - 0 = 5
```

D. Bring down the next digit.

```
     0
19 )513
    0
    51
```

E. Repeat.

```
     0 2          Estimate
19 )513
    0
    51
    38            Multiply
     133          Subtract
                  Bring down
```

```
     0 2 7        Estimate
19 )513
    0
    51
    38
     133
     133          Multiply
       0          Subtract
```

Low-Stress Algorithm

A Low-Stress Algorithm is available for division. However, its advantages over the customary algorithm may not be readily apparent, and we don't recommend its use at this point.

Vocabulary

- Divide
  Dividend--the number being divided
  Divisor--the number the dividend is being divided by
  Quotient--the resulting answer

Common Errors

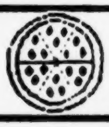
1. Making errors in division/multiplication facts
2. Making estimates too large or too small
3. Bringing down the wrong number for the dividend
4. Omitting zero place holders

Task Analysis (Skills)

- D1 Recall division number facts
- D2 1-digit divisor into 2-digit dividend, all sight division, no remainders
- ** D3 1-digit divisor into 2-digit dividend, remainders possible
- D4 1-digit divisor into 3-digit dividend, all sight division, no remainders
- ** D5 1-digit divisor into 3-digit dividend, remainders possible
- D6 1-digit divisor into 4-digit dividend, all sight division, no remainders
- ** D7 1-digit divisor into 4-digit dividend, remainders possible
- D8 2-digit divisor into 3-digit dividend, no remainders
- ** D9 2-digit divisor into 2-digit dividend, remainders possible
- ** D10 2-digit divisor into 3-digit dividend, remainders possible
- ** D11 2-digit divisor into 4-digit dividend, remainders possible
- ** D12 2-digit divisor into 5-digit dividend, remainders possible

** These skills may extend beyond MFMT requirements by including problems involving remainders.

DOMAIN 3
MIXED NUMBER/FRACTION OPERATIONS



PREREQUISITES
Simplify Fractions

The term "simplify" is used in the Maryland Functional Math Test to mean (1) reduce to the lowest terms and (2) convert an improper fraction to a mixed number.

The following are component or prerequisite skills related to simplifying fractions:

Basic Vocabulary:

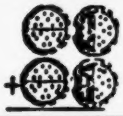
V1 Recognize numerator and denominator

Reducing:

R1 Recognize reduced and not reduced fractions
R2 Reduce fractions to lowest terms

Convert Improper Fraction to Mixed Number:

C1 Recognize proper and improper fractions and mixed numbers
C2 Convert improper fraction to mixed number



OBJECTIVE 2.1.5
Add Mixed Numbers

Content Scope

- Problems consist of two mixed numbers
- The whole numbers are single-digit numbers
- The fractions may have like or unlike denominators
- The fractions never add to improper fractions

Question Format

- Vertical

Add and simplify:

$$\begin{array}{r} 3\ \frac{2}{5} \\[4pt] +\ 1\ \frac{1}{5} \\ \hline \end{array}$$

Add and simplify:

$$\begin{array}{r} 4\ \frac{3}{7} \\[4pt] +\ 9\ \frac{2}{9} \\ \hline \end{array}$$

Strategy

A Generic Strategy

Check to see if the fractions have the same bottom number (denominator).

IF YES:

1. Bring down the bottom number (denominator).
2. Add the top numbers (numerators).
3. Add the whole numbers.
4. Simplify (reduce) if needed.

IF NO:

1. Find a common denominator. * See below.
2. Rename both fractions to have common denominators. * See below.
3. Bring down the common denominator.
4. Add the new numerators.
5. Add the whole numbers.
6. Simplify (reduce) if needed.

* NOTE: In adding mixed numbers, the MFMT does not require the students to deal with improper fractions, so the above strategy includes no provision for improper fractions.

Strategies for Finding a Common Denominator

I. Simplified Strategy

Check to see if the smaller of the two denominators can be divided into the larger.

IF YES:	**IF NO:**
The larger denominator becomes the common denominator.	The two denominators are multiplied to produce a common denominator.
$\begin{array}{rl} & 6\frac{2}{9} = 6\frac{2}{9} \\ + & 1\frac{1}{3} = 1\frac{X}{9} \\ \hline \end{array}$	$\begin{array}{rl} & 2\frac{1}{6\times 8} = 2\frac{X}{48} \\ + & 1\frac{3}{8\times 6} = 1\frac{X}{48} \\ \hline \end{array}$

II. More Sophisticated Strategy

Find the Lowest Common Multiple (LCM) of the two denominators, which becomes the Lowest Common Denominator (LCD).

$2\frac{1}{6}$ Multiples of 6 are: 6 12 18 **24** 30 36 42 48

The LCM is 24.

$+\ 1\frac{3}{8}$ Multiples of 8 are: 8 16 **24** 32 40 48 56 64

A variation of this strategy is to count by the larger denominator (in this case by 8's) until you reach a multiple of the smaller denominator.

Strategy for Renaming Fractions to a Given Denominator

This step follows the identification of a common denominator. One or both fractions are converted to equivalent fractions with new denominators. Both numerator and denominator are multiplied by the same number.

$$\begin{array}{rl} & 1\frac{1\times 3}{3\times 3} = 1\frac{3}{9} \\ + & 6\frac{1}{9} = 6\frac{1}{9} \\ \hline \end{array} \qquad \begin{array}{rl} & 2\frac{3\times 4}{6\times 4} = 2\frac{12}{24} \\ + & 1\frac{3\times 3}{8\times 3} = 1\frac{9}{24} \\ \hline \end{array}$$

Vocabulary

- Simplify—reduce to lowest terms
  Denominator—the bottom number in a fraction
  Numerator—the top number in a fraction
  Common Denominator—two fractions have the same denominator

Rename--change a fraction to a given denominator

Example: $\frac{3}{4} = \frac{6}{8}$

Reduce--divide the numerator and the denominator by the same number

Example: $\frac{6}{8} = \frac{3}{4}$

Common Errors

1. Failing to simplify (reduce) answers
2. Adding numerators and denominators

$$\begin{array}{r} 6\frac{2}{6} \\ +\ 1\frac{1}{3} \\ \hline 7\frac{3}{9} \end{array}$$

3. Finding common denominators, but not renaming fractions

The numerator should have become 3.

$$\begin{array}{rcr} 6\frac{1}{2} & = & 6\frac{1}{6} \\ +\ 1\frac{1}{3} & = & 1\frac{1}{6} \\ \hline & & 7\frac{2}{6} \end{array}$$

The numerator should have become 2.

Task Analysis (Skills)

V1 Recognize numerator and denominator
R1 Recognize reduced and not reduced fractions
R2 Reduce fractions to lowest terms
A1 Find a common denominator or lowest common denominator
A2 Rename fractions to a given denominator
A3 Add fractions with like denominators
A4 Add fractions with unlike denominators
A5 Add mixed numbers with like denominators
A6 Add mixed numbers with unlike denominators

OBJECTIVE 2.1.6
Subtract Mixed Numbers

Content Scope

- Problems consist of two mixed numbers
- The whole numbers are single-digit numbers
- The fractions may have like or unlike denominators
- The fractions never require regrouping from the whole number--the top number is always larger

Question Format

- Vertical

Subtract and simplify:

$$\begin{array}{r} 9\,\frac{2}{9} \\ -\ 7\,\frac{1}{9} \\ \hline \end{array}$$

Subtract and simplify:

$$\begin{array}{r} 4\,\frac{4}{5} \\ -\ 2\,\frac{1}{4} \\ \hline \end{array}$$

Strategy

Check to see if the fractions have the same bottom number (denominator).

IF YES:	**IF NO:**
1. Bring down the bottom number (denominator).	1. Find a common denominator.
2. Subtract the top numbers (numerators).	2. Rename both fractions to have common denominators.
3. Subtract the whole numbers.	3. Bring down the common denominator.
4. Simplify (reduce) if needed.	4. Subtract the new numerators.
	5. Subtract the whole numbers.
	6. Simplify (reduce) if needed.

NOTE: In subtracting mixed numbers, the MFMT does not require the students to regroup from the whole number to a fraction, so the above strategy includes no provision for this process.

Strategies for Finding a Common Denominator

I. Simplified Strategy

Check to see if the smaller of the two denominators can be divided into the larger.

IF YES:

- The larger denominator becomes the common denominator.

$$\begin{array}{r} 6\,\dfrac{2}{9} = 6\,\dfrac{2}{9} \\ -\;1\,\dfrac{1}{3} = 1\,\dfrac{X}{9} \\ \hline \end{array}$$

IF NO:

- The two denominators are multiplied to produce a common denominator.

$$\begin{array}{r} 2\,\dfrac{5}{6\times 8} = 2\,\dfrac{X}{48} \\ -\;1\,\dfrac{3}{8\times 6} = 1\,\dfrac{X}{48} \\ \hline \end{array}$$

II. More Sophisticated Strategy

Find the Lowest Common Multiple (LCM) of the two denominators, which becomes the Lowest Common Denominator (LCD).

$2\,\frac{1}{6}$ Multiples of 6 are: 6 12 18 **24** 30 36 42 48

The LCM is 24.

$-\;1\,\frac{1}{8}$ Multiples of 8 are: 8 16 **24** 32 40 48 56 64

A variation of this strategy is to count by the larger denominator (in this case by 8's) until you reach a multiple of the smaller denominator.

Strategy for Renaming Fractions to a Given Denominator

This step follows the identification of a common denominator. One or both fractions are converted to equivalent fractions with new denominators. Both numerator and denominator are multiplied by the same number.

$$\begin{array}{r} 1\,\dfrac{1\times 3}{3\times 3} = \;\; 1\,\dfrac{3}{9} \\ -\;1\,\dfrac{1}{9} \;\;=\;\; 6\,\dfrac{1}{9} \\ \hline \end{array}$$

$$\begin{array}{r} 2\,\dfrac{3\times 4}{6\times 4} = \;\; 2\,\dfrac{12}{24} \\ -\;1\,\dfrac{3\times 3}{8\times 3} = \;\; 1\,\dfrac{9}{24} \\ \hline \end{array}$$

Vocabulary

* Simplify--reduce to lowest terms
Denominator--the bottom number in a fraction
Numerator--the top number in a fraction
Common Denominator--two fractions have the same denominator
Rename--change a fraction to a given denominator

Example: $\frac{3}{4} = \frac{6}{8}$

Reduce--divide the numerator and the denominator by the same number

Example: $\frac{6}{8} = \frac{3}{4}$

Common Errors

1. Failing to simplify (reduce) answers
2. Subtracting numerators and denominators

$$\begin{array}{r} 6\frac{7}{10} \\ -\ 1\frac{3}{4} \\ \hline 5\frac{4}{6} \end{array}$$

3. Finding common denominators, but not renaming fractions

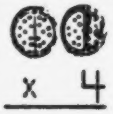
$$\begin{array}{rcl} 6\frac{2}{3} & = & 6\frac{2}{6} \\ -\ 1\frac{1}{2} & = & 1\frac{1}{6} \\ \hline & & 5\frac{1}{6} \end{array}$$

The numerator should have become 4.

The numerator should have become 3.

Task Analysis (Skills)

V1 Recognize numerator and denominator
R1 Recognize reduced and not reduced fractions
R2 Reduce fractions to lowest terms
A1 Find a common denominator or lowest common denominator
A2 Rename fractions to a given denominator
S3 Subtract fractions with like denominators
S4 Subtract fractions with unlike denominators
S5 Subtract mixed numbers with like denominators
S6 Subtract mixed numbers with unlike denominators



OBJECTIVE 2.1.7
Multiply a Whole Number by a Fraction

Content Scope

- The whole number is a single-digit number
- The fraction is a proper fraction
- The product may be an improper fraction
- There are no common factors

Question Format

- Horizontal (the whole number or the fraction may come first)

Multiply and simplify:

$$9 \times \frac{2}{11} =$$

Multiply and simplify:

$$\frac{7}{9} \times 4 =$$

Strategy

1. Place a 1 under the whole number in the fraction.

$$\frac{7}{9} \times 4 = \frac{7}{9} \times \frac{4}{1}$$

2. Multiply the top numbers (numerators).
3. Multiply the bottom numbers (denominators).
4. Simplify (change improper to proper).

$$\frac{7}{9} \times \frac{4}{1} = \frac{28}{9} = 3\frac{1}{9}$$

Vocabulary

- **Simplify**--reduce to lowest terms with no improper fractions

Denominator--the bottom number in a fraction
Numerator--the top number in a fraction
Improper--the top number (numerator) is larger than the bottom number (denominator), making the fraction larger than one

Common Errors

1. Failing to simplify answers

2. Adding numerators

$$\frac{2}{9} \times 4 = \frac{6}{9}$$

3. Inverting fraction, as if to divide

$$\frac{7}{9} \times 5 = \frac{7}{9} \times \frac{1}{5}$$

Task Analysis (Skills)

R1 Recognize reduced and not reduced fractions
R2 Reduce fractions to lowest terms
C1 Recognize proper and improper fractions and mixed numbers
C2 Convert improper fraction to mixed number
M1 Multiply a whole number by a fraction

OBJECTIVE 2.1.13
Find the Missing Term in a Proportion

Content Scope

- The terms (numerator or denominator) may have one or two digits
- Reducing is not required--the missing term may be a part of an unreduced fraction
- One denominator is a factor of the other

Question Format

- Horizontal--the missing term may be the numerator or the denominator in the first or the second fraction

Find the missing term:

$$\frac{3}{8} = \frac{12}{N}$$

Find the missing term:

$$\frac{4}{N} = \frac{12}{18}$$

Find the missing term:

$$\frac{N}{5} = \frac{20}{25}$$

Find the missing term:

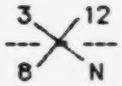
$$\frac{3}{4} = \frac{N}{24}$$

Strategy

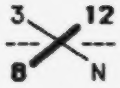
Basic Strategy:

$$\frac{3}{8} = \frac{12}{N}$$

1. Draw an X.



2. Multiply the connected numbers.



8 X 12 = 96

3. Divide by the remaining number.

$$\frac{3}{\cancel{8}} = \frac{\cancel{12}}{N} \qquad \begin{array}{r}32\\3\overline{)96}\end{array} \qquad N = 32$$

Vocabulary

- * Term--a number in a problem
- Ratio--a comparison of two numbers
- Proportion--a statement of equality between two ratios
- Variable--a letter that stands for a number
- Product--the answer in multiplication

Task Analysis (Skills)

T1 Find the missing term in a proportion

DOMAIN 4
DECIMAL OPERATIONS

OBJECTIVE 2.1.8
Add Decimals

Content Scope

- Two decimal places
- Two 3- to 5-digit numbers or three 2- to 4-digit numbers
- One or two regroupings

Question Format

- Add
- One problem is horizontal; others are vertical

Strategy

1. Put the decimal point to the right of each whole number.

   3.4 + 25 + .67 = ___ becomes 3.4 + 25. + .67 = ___

2. If necessary, line up the numbers to be added by aligning the decimal points in a straight column.

   3.4 + 25. + .67 = ___ becomes

   $$\begin{array}{r} 3.4 \\ +\ 25. \\ \underline{.67} \end{array}$$

3. Fill in the blank spaces with zeros.

   $$\begin{array}{r} 03.40 \\ +\ 25.00 \\ \underline{00.67} \end{array}$$

   Note: The number of zeros after the decimal point is irrelevant.

4. Bring down the decimal point:

   $$\begin{array}{r} 03.40 \\ +\ 25.00 \\ \underline{00.67} \\ . \end{array}$$

   and add:

   $$\begin{array}{r} 03.40 \\ +\ 25.00 \\ \underline{00.67} \\ 29.07 \end{array}$$

Vocabulary

- Add

Common Errors

1. Aligning the decimal points incorrectly when setting up the problem

$3.4 + 5 + .67 =$

$$\begin{array}{lr} & 3.4 \\ + & 5 \\ \hline & .67 \end{array} \quad \text{should be} \quad \begin{array}{lr} & 3.4 \\ + & 5.00 \\ \hline & .67 \end{array}$$

2. Misplacing the decimal point in the answer

$$\begin{array}{lr} & 3.40 \\ + & 5.00 \\ & \underline{.28} \\ & .868 \end{array} \quad \text{(should be 8.68)}$$

3. Placing the decimal point incorrectly in a whole number

$3.4 + 5 + .67 =$

$$\begin{array}{lr} & 3.4 \\ + & .5 \\ \hline & .67 \end{array} \quad \text{should be} \quad \begin{array}{lr} & 3.40 \\ + & 5.00 \\ \hline & .67 \end{array}$$

4. Forgetting to bring the decimal point down for the answer

5. Making addition fact errors

Task Analysis (Skills)

OD1 Write numbers in a column according to the decimal place
AD1 Add up to three numbers with one decimal place without regrouping
AD2 Add up to three numbers with one decimal place with regrouping
AD3 Add two numbers with two decimal places without regrouping
AD4 Add two numbers with two decimal places with regrouping
Z1 Recognize that with any decimal ending in zero(s), the zero(s) may be dropped

OBJECTIVE 2.1.9
Subtract Decimals

Content Scope

- Problems will consist of 3- to 5-digit numbers
- Zero to two regroupings
- Minuend and subtrahend will have one or two decimal places
- Each term will have an equal number of decimal places

Question Format

- Vertical

Strategy

1. Line up the numbers to be subtracted by aligning the decimal points in a straight column.

$$\begin{array}{r} 43.76 \\ -\underline{21.66} \end{array}$$

2. Bring down the decimal point.

$$\begin{array}{r} 43.76 \\ -\underline{21.66} \\ . \end{array}$$

3. Subtract with no emphasis on the decimal point.

$$\begin{array}{r} 43.76 \\ -\underline{21.66} \\ 22.10 \end{array}$$

4. Drop the final zero(s) if necessary.

$$22.10 = 22.1$$

Vocabulary

- Subtract

Common Errors

1. Omitting decimal points in the answer
2. Misplacing the decimal point in the answer (by following the rules of multiplication)
3. Making subtraction fact errors

Task Analysis (Skills)

SD1 Subtract two numbers with one decimal place without regrouping
SD2 Subtract two numbers with one decimal place with regrouping
SD3 Subtract two numbers with two decimal places without regrouping
SD4 Subtract two numbers with two decimal places with regrouping
Z1 Recognize that with any decimal ending in zero(s), the zero(s) may be dropped

OBJECTIVE 2.1.10
Multiply Decimals

Content Scope

- Problems will require the student to find the product of two numbers
- Each factor will have a maximum of two decimal places
- A minimum of one and a maximum of three decimal places total for the two factors
- The multiplier will always contain two digits
- The multiplicand in upper level problems will contain two or three digit
- The multiplicand in lower level problems will always contain two digits

Question Format

- Vertical

Strategy

1. Multiply.

$$\begin{array}{r} 2.3 \\ \underline{\times\ 1.2} \end{array}$$

2. Count the digits to the right of the decimal point(s) in the numbers to be multiplied. Add them.

$$\begin{array}{lll} 2.3 & \longrightarrow & 1 \text{ digit} \\ 1.2 & \longrightarrow & \underline{1 \text{ digit}} \\ & & 2 \text{ digits} \end{array}$$

3. Put the decimal point in the answer, counting from the right to the left, so it has the same number of digits as step #2.

$$\begin{array}{rl} 2.3 & \\ \times\ \underline{1.2} & \\ 46 & \\ \underline{+\ 230} & \\ 2.\underline{76} & \quad 2 \text{ digits} \end{array}$$

Common Errors

1. Misplacing or omitting the decimal point in the answer
2. Making multiplication fact errors

Vocabulary

- Multiply

Task Analysis (Skills)

MD1 Identify the number of decimal places in the product
MD2 Place the decimal point in the product correctly with up to two decimal places
MD3 Place the decimal point in the product correctly with up to three or four decimal places
MD4 Multiply a two or three digit number by a two digit number with up to two decimal places in each number
Z1 Recognize that with any decimal ending in zero(s), the zero(s) may be dropped

OBJECTIVE 2.1.11
Divide Decimals

Content Scope

- Problems will require the student to divide a number by one of its factors
- The divisor will be a one- or two-digit whole number
- On a given test, at least one item will have a single-digit divisor
- The dividend will have one or two decimal places
- Problems will have a two- to four-digit dividend

Question Format

- Problems presented in a "division box" format

Strategy

1. Students determine if the divisor is a whole number.

   NOTE: The divisor will always be a whole number on the MFMT. This step is added to avoid confusion later on when the student encounters divisors with decimals.

2. When you have a whole number, move decimal point straight up.

$$\begin{array}{r} . \\ 25\,\overline{)\,2.25} \end{array}$$

3. Divide (put zeros in the blank spaces).

```
        .09
    25) 2.25
      - 0 0
        2 25
      - 2 25
        0 00
```

Common Errors

1. Misaligning or omitting the decimal point in the quotient
2. Failing to fill in each space after the decimal
3. Making division fact errors

Vocabulary

- Divide

Task Analysis (Skills)

DD1 Place the decimal point in the quotient correctly when dividing by a whole number

DD2 Divide a 1-digit whole number into a 2- to 4-digit number having 1 or 2 decimal places
Ex. 3) 2.49

DD3 Divide a 2-digit whole number into a 2- to 4-digit number having 1 or 2 decimal places
Ex. 24) 67.2

Z1 Recognize that with any decimal ending in zero(s), the zero(s) may be dropped

OBJECTIVE 2.1.12
Find a Percent of a Number

Content Scope

- Percents will be one digit (1 through 9) or a two-digit multiple of five
- Whole numbers will be two or three digits

Question Format

- Solve:
  (5)% of (30)

Strategy

1. Write the percent number without the % sign.

   5% of 30 = ___
   5% becomes 5

2. Put the decimal to the right of the number.

   5.

3. Move the decimal point 2 places to the left and put a zero in front of the number, if necessary.

   .05.
   --

4. Multiply the numbers.

   30
   x .05
   150
   00
   150

5. Put the decimal point in the answer correctly.

   30
   x .05
   150
   00
   1.50
   --

Vocabulary

* Solve
* Of--means "multiplied by"
* %

Decimal

Common Errors

1. Using an incorrect operation
2. Misplacing or omitting the decimal point

Task Analysis (Skills)

PD3 Rename percents as decimals
PN1 Translate "of" as "multiplied by"
PN2 Find the percent of a number

DOMAIN 5
MEASUREMENT

OBJECTIVE 2.2.1
Read Scales on Measuring Instruments

Content Scope

- Items require students to read a scale on a measuring instrument
- Problems show a clearly-drawn picture of a linear or circular (dial) scale on an instrument that measures length, temperature, or capacity
- Pictures depicting a length measurement will show a common object correctly aligned to be measured
- Measuring instruments and objects in correct relative scale; pictures may be enlarged or reduced
- Length measured in cm or mm
- Temperature measured in C°
- Capacity measured in mL
- Scales should display only whole numbers of one or two digits
- Half intervals may be marked with unnumbered lines on rulers marked in cm and on measuring cups
- Thermometers may be numbered at 1°, 2°, or 10° unit intervals; the midpoint may be shown as an unnumbered line on those with 2 or 10 intervals
- Upper level test may require student to approximate a value that is not exactly at a marked interval; however, this value may not be at the midpoint between two marked intervals
- Lower level items will require measurement only to a marked interval

Question Format

- Find the (attribute) of this (object) to the nearest (unit).

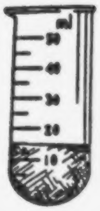
Strategy

1. Students should be familiar with what is to be measured, the types of instruments used for measuring, and the units used to measure.

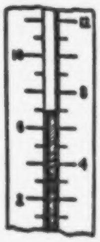
Attributes	Instrument	Units
length/distance	ruler	mm, cm, *m, *km
temperature	thermometer	C°
capacity	(liquid) measuring cup, beaker	mL, *L
mass/weight	(solid) scale	*g, kg
time	clock stopwatch	hours, mins., seconds

* These units of measurement are not used in this objective but will be used in 3.2.2.

2. When reading for an exact measurement, students should determine the intervals of units marked on the measuring instrument.

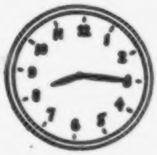


The units of interval marked on this test tube are 5 mL. The reading is 15 mL.

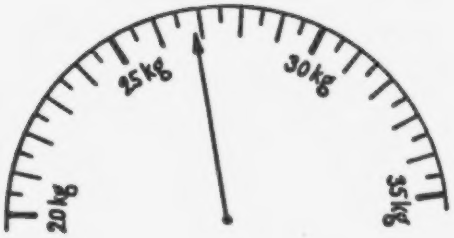


The units of interval for this thermometer are marked in 1° intervals. The temperature reading is 7°C.

3. When reading for an approximate measurement, students should first determine the interval of units being used on the measuring instrument and then round off the reading to the nearest marked interval.



To the nearest 5 minute interval, the time is 8:15. To the nearest one hour interval the time is 8:00.



To the nearest 1 kg interval, the scale reads 27 kg.

Vocabulary

Interval--amount of space between marked units
Linear Units: mm, cm, m, km
Area Units: mm^2, cm^2, m^2, km^2
Volume Units: cm3
Capacity Units: mL, L
Weight/Mass Units: g, kg
Temperature Units: °C
Time Units: minute(s), hour(s)
Distance

Common Errors

1. Reading an adjacent or closest marked value
2. Rounding off a value incorrectly
3. Failing to round a value to the stated unit interval
   Example: To the nearest hour, round off 8:13
   Incorrect: 8:13 is almost 8:15 (8:15 is not an hour interval)
   Correct: 8:13 is almost 8:00

Task Analysis (Skills)

MM1 Recognize length, temperature, and capacity from a scale on a measuring instrument
MM2 Identify the appropriate units of measure
MM3 Estimate to the nearest whole unit of measure

OBJECTIVE 3.2.1
Find Perimeter and Area of Simple Polygons

Content Scope

- The lengths of all sides will be one- or two- digit whole numbers
- A perimeter problem will show a three to five-sided unshaded polygon
- A square will be labeled with the length of the bottom side only
- A rectangle will be labeled with the lengths of the bottom and right hand sides
- All other figures will be labeled with the lengths of all sides
- An area problem will show a square or a rectangle labeled as described above
- The interior of the figure in an area problem will be shaded

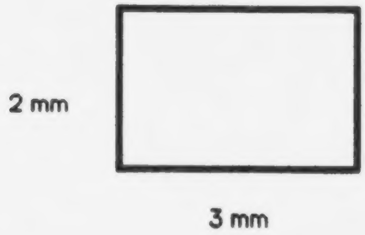
Question Format

- Find the (perimeter/area) of the (square/rectangle/figure).

Strategy

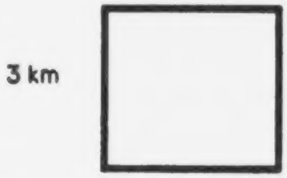
1. **Perimeter** (add)

   A. To find a perimeter, add the measurements for each side. The drawing for a rectangle will have only one length and one width marked since the opposite sides are equal.



P = 2mm + 2mm + 3mm + 3mm + 3mm = 13mm

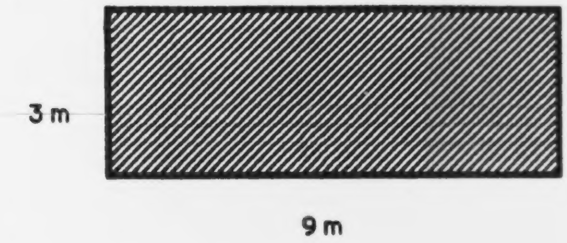
   B. The figure drawing for a square will have the length of only one side marked since the remaining sides are the same length.



P = 3km + 3km + 3km + 3km = 12km

2. **Area** (always multiply)

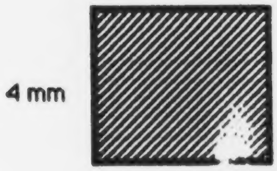
A. To find the area of a rectangle, multiply the length by the width.



Area of rectangle = length x width

$A = 9m \times 3m$
$A = 27m^2$

B. To find the area of a square, multiply one side by another side.



Area of a square = side X side
$A = 4mm \times 4mm$
$A = 16mm^2$

Vocabulary

* Perimeter
* Area
* Square
* Rectangle
* Figure
Length
Width

Common Errors

1. Omitting a value
2. Using the same value twice
3. Calculating area for perimeter or perimeter for area
4. Failing to use the exponent for square units

Task Analysis (Skills)

MPA1 Identify a square
MPA2 Identify a rectangle
MPA3 Compute the perimeter of various polygons
MPA4 Compute the areas of squares and rectangles
MPA5 Recognize that area is always expressed in square units with an exponent of two

OBJECTIVE 3.2.2
Choose an Appropriate Unit of Measure

Content Scope

- Students will be expected to select the appropriate unit of measure. The following attribute names are eligible for testing: length, width, distance, height, area, volume, capacity, weight, mass, temperature.
- Area attribute will deal only with square and rectangular objects
- Volume attribute will deal only with cubes and right rectangular solids
- Object named will be a familiar object

Question Format

- The (attribute) of (name or description of object) would best be measured/expressed in:

Strategy

Example: The weight of a cookie would best be measured in:

A. g	C. km
B. mL	D. mm

1. Read the question.
2. Find key words. (weight, cookie)
3. Determine the attribute. (weight)
4. Determine which type of unit is appropriate. (Weight/Mass Units Measurement)
5. Determine the size of the object.
6. Choose the appropriate magnitude of unit. (gram [g] is appropriate for the weight of a plastic straw or pen [rather than a kilogram])

Vocabulary

Terms and Abbreviations

LINEAR	AREA	WEIGHT/MASS	CAPACITY	VOLUME	TEMPERATURE
mm millimeter	mm^2 mm squared	g gram	mL milliliter	cm^3 cm cubed	C Celsius
cm centimeter	cm^2 cm squared	kg kilogram	L Liter	mm^3 mm cubed	
m meter	m^2 m squared			m^3 m cubed	
km kilometer	km^2 km squared			km^3 km cubed	

NOTE: Understand that within each category (linear, area, weight, etc.) particular units of measurement are appropriate for particular objects.

Examples:

A. Linear units of measurement appropriate for:

mm - the length of a pencil eraser
cm - the length of a pencil
m - the length of a room
km - the distance from Baltimore, MD, to Washington, DC

B. Area units of measurement appropriate for:

mm^2 - the area of a postage stamp
cm^2 - the area of a sheet of paper
m^2 - the area of a baseball field
km^2 - the area of the state of Arizona

C. Weight/Mass units of measurement appropriate for:

g - the weight of a plastic straw or the weight of a pen
kg - the weight of a portable TV

D. Capacity (liquid) units of measurement appropriate for:

mL - the capacity of a shampoo bottle
L - the capacity of a car's gas tank

E. Volume (solid) units of measurement appropriate for:

cm^3 - the volume of a shoe box

F. Temperature units of measurement appropriate for:

C° - the temperature of a day in July

Common Errors

1. Selecting a unit that measures an attribute other than that required by the problem
   Example: The volume of a hot water heater would best be measured in ° Celsius.
   The correct answer is cm^3.
2. Selecting a unit of inappropriate magnitude
   Example: The height of the flag pole would best be measured in millimeters.
   The correct answer is m.
3. Making a selection that has an incorrect exponent
   Example: The area of your classroom floor would best be measured in meters.
   The correct answer is m^2.

Task Analysis (Skills)

MAU1 Identify the key words in a sentence question: linear (distance, height), area, weight/mass, capacity (liquid), volume (solid), temperature (C)
MAU2 Choose the appropriate type of unit of measure for the attribute
MAU3 Determine the relative size of what is being measured
MAU4 Choose an appropriate magnitude of the unit of measure

OBJECTIVE 5.1.6
Find Elapsed Time

Content Scope

- Problems require a single calculation only
- Problems contain two times

Question Format

- Written word problem

Strategy

A. A Simple Strategy

I. Find starting or ending time:

You put a cake in the oven at 1:32 P.M. The cake should bake for 1 hour and 15 mins. What time should you take the cake out of the oven?

1. Determine what is being asked. What time should you take the cake out of

the oven? (You need to know ending time.)
2. Draw a clock.
3. Mark given starting or ending time.
4. Count the elapsed time.
   Given: Beginning time? Count forward.
   Given: Ending time? Count backward (counterclockwise).

II. Find elapsed time

1. Draw a clock.
2. Locate starting and ending time.
3. Count whole hours from starting time to ending time.
4. Count remaining minutes.

B. A Mathematical Strategy

1. In solving this type of problem, we are dealing with three times:

   a. A start time (when we started what we are doing)
   b. An elapsed time (how long it took us to do what we are doing)
   c. An end time (when we finished what we were doing)

2. The way to do the problem depends on which two times are given:

   a. Given a start time and an elapsed time, ADD.

Example:

$$\begin{array}{lrl} \text{start time} & 10{:}11 & \text{A.M.} \\ \text{elapsed time} & \underline{+\ \ 3{:}15} & \text{(3 hours and 15 minutes)} \\ & 13{:}26 & \\ & \underline{-\ 12{:}00} & \text{(time to get to noon)} \\ & 1{:}26 & \text{P.M.} \end{array}$$

   b. Given a start time and an end time, SUBTRACT.

Example:

$$\begin{array}{lrl} \text{end time} & 3{:}06 & \text{P.M.} \\ \text{start time} & \underline{-\ 11{:}12} & \text{A.M.} \end{array}$$

Since we cannot subtract 11 hours from 3, we add the 12 hours to get to noon:

$$\begin{array}{rl} 3{:}06 & \text{P.M.} \\ \underline{+\ 12{:}00} & \text{(time to get to noon)} \\ 15{:}06 & \end{array}$$

Now we can subtract:

$$\begin{array}{r} 15{:}06 \\ \underline{-\ 11{:}12} \\ 4 \end{array}$$

We cannot subtract 1 from 0 so we will have to borrow, but the 5 does not stand for 5 units; it stands for 5 hours. Since there are 60 minutes in an hour, we will borrow one hour.

$$\begin{array}{r} 1\overset{4}{\cancel{5}}{:}\overset{60}{06} \\ \underline{-\ 11{:}12} \\ 3{:}54 \end{array}$$

c. Given an end time and an elapsed time, SUBTRACT.

$$\begin{array}{lr} \text{end time} & 3{:}\overset{3}{\cancel{4}}6\text{ P.M.} \\ \text{elapsed time} & \underline{-\ 2{:}39}\phantom{\text{ P.M.}} \\ & 1{:}07\text{ P.M.} \end{array}$$

d. Remember start and end times are always in A.M. or P.M. and elapsed time is always in hours and minutes.

3. A prerequisite skill for this strategy is to write hours and minutes with a colon.

Example: 3 hours and 45 minutes = 3:45

Vocabulary

A.M.—short for "ante meridiem" translates to "before noon"
P.M.—short for "post meridiem" translates to "after noon"
Clockwise
Counterclockwise
Elapsed time
Noon
Midnight

Common Errors

1. Confusing A.M., P.M., noon, and midnight
2. Using the incorrect procedure
3. Making computation errors

Task Analysis (Skills)

MET1	Identify correct time by writing hours and minutes with a colon
MET2	Recall that 60 minutes equals 1 hour
MET3	Identify start time, end time, and/or elapsed time in word problems
MET4	Subtract minutes and hours from minutes and hours, no regrouping
MET5	Subtract minutes and hours from minutes and hours, with regrouping
MET6	When the minuend is smaller than the subtrahend, add 12 hours (12:00) to the minuend
MET7	When the answer to start or end time is larger than 12:59, subtract 12:00 Ex. $\begin{array}{r} 13{:}30 \\ \underline{-\ 12{:}00} \\ 1{:}30 \end{array}$
MET8	Find end time by adding start time and elapsed time
MET9	Find elapsed time by subtracting start time from end time
MET10	Find start time by subtracting elapsed time from end time
MET11	Select the correct procedure for finding start, end, or elapsed time

DOMAIN 6
USING DATA

OBJECTIVE 2.3.1
Use Information from Tables

Content Scope

- The type of table will be familiar to students (a distance table or tax table) and will have the following attributes:
    - A brief, explanatory title
    - Numeric values
    - An ordinate and an abscissa, labeled with a maximum of six headings on one axis and five on the other

Question Format

- A question about a table asking the student to determine a specific numeric value from the table

Strategy

WITHHOLDING TABLE

WAGES		TAX TO BE WITHHELD
AT LEAST	BUT LESS THAN	
$405.05	405.22	$15.85
405.22	405.39	15.86
405.39	405.56	15.87
405.56	405.73	15.88
405.73	405.90	15.89
405.90	406.07	15.90

Last week, Harry made $405.73. What was the amount of taxes withheld?

1. Read the question carefully to find the two key words or phrase necessary for locating the information. ($405.73, taxes withheld)
2. Analyze the table.
   a. Read the title to determine the topic. (Withholding Table)
   b. Read the column headings horizontally across the top of the table. (Wages, Tax to be Withheld)
   c. Read the row headings down the first column of the table. (There are no row headings in this example.)
3. Find one of the key words or phrases as a column heading and one as a row heading. Trace a line down from the column heading and to the right from the row heading. The place where the two lines meet is the answer to the question. ($15.89)

Vocabulary

Horizontal--row
Vertical--column
Title--statement of the topic of a table
Table--chart using words, numbers, and/or symbols to provide information in a condensed and orderly form

Common Errors

1. Identifying incorrect key words
2. Reading data from the wrong row or column

Task Analysis (Skills)

UT1	Identify information on a table
KQ1	Select key words and phrases in a question
UT2	Locate key words and phrases on a table
UT3	Find the point at which the key row and column intersect to locate data on a table

OBJECTIVE 2.3.2
Use Information from Graphs

Content Scope

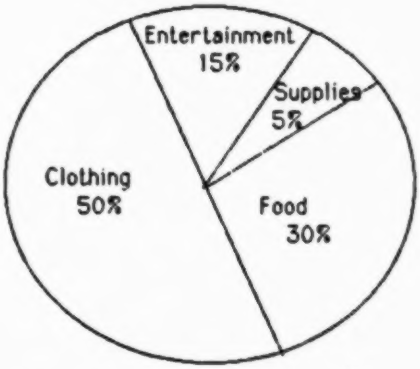
- Perform one calculation using data from the graph
- A circle graph will have a maximum of six labeled segments giving a whole number percentage
- A line graph presenting a single relationship will be drawn on a grid having a maximum of eight lines in each direction
- A bar graph presenting a single relationship will have a maximum of eight shaded bars running horizontally or vertically with grid lines perpendicular to the bars extending completely across the graph

Question Format

- Display of a graph with a question requiring a simple arithmetic computation using data read or estimated from the graph

Strategy

John's Budget



According to the graph above, what percentage of John's budget is spent on entertainment and food?

1. Read the question and pick out the key words and phrases. (what percentage, entertainment and food)
2. Study the graph and read the title. (John's Budget)
4. Decide what operations have to be performed. (addition)
5. Determine the required information from the graph. (15%, 30%)
6. Perform the appropriate operation.

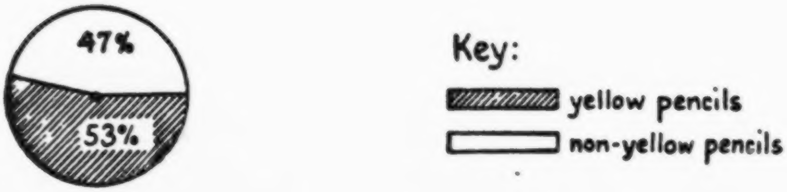
$$\begin{array}{r} 15\% \\ +\ \underline{30\%} \\ 45\% \end{array}$$

Vocabulary

Circle Graph—a circle which shows graphically how a whole (100%) is divided into parts

The circle below represents all students. The circle is divided to show the percent of students with yellow pencils as compared to all students with pencils.

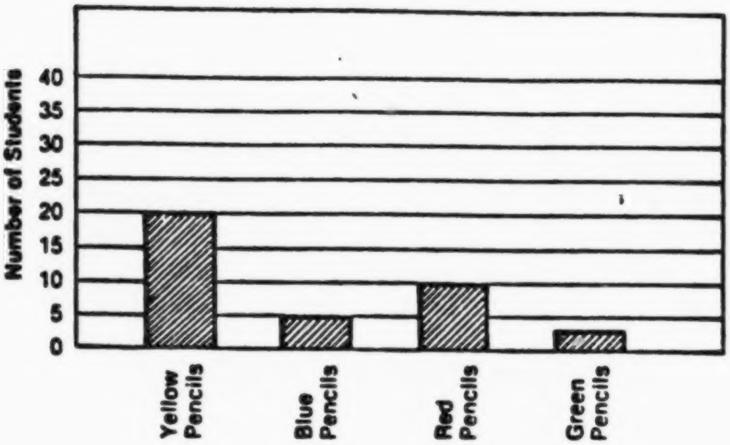
Yellow Pencils in Classroom



Bar Graph--a graph which compares the relative frequency of various related yet distinct items

On the graph below, the items are related since they are all pencils in Room 321. Each bar represents a different color pencil. The height of each bar is determined by the number of pencils in each color.

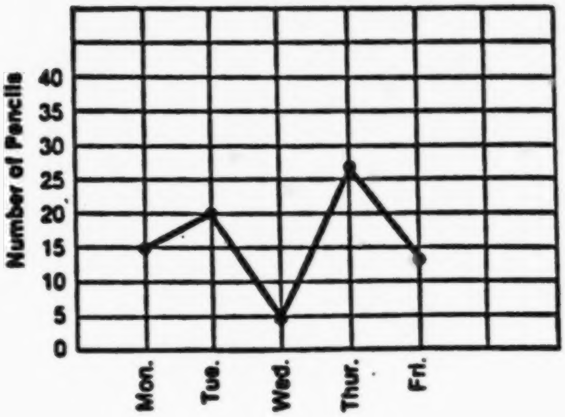
Different Pencil Colors in Room 321



Line Graph--a graph which compares variations in specific data when gathered at different times

The line graph below shows the varying number of students with yellow pencils on different days of the week.

Yellow Pencils in Classroom



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Common Errors

1. Misreading the graph and using the incorrect values in the computation
2. Completing only one step of a two-step problem
3. Using an incorrect operation
4. Not identifying the unit of measure on the scale and the intervals between them (Example: 10 and 20 are given units of measure and 15, the answer, is halfway between them.)

Task Analysis (Skills)

UG1 Identify information on a circle graph
UG2 Identify information on a bar graph
UG3 Identify information on a line graph
KQ1 Select key words and phrases in a question
KQ2 Select an operation from key words and phrases
UG4 Identify intervals on horizontal or vertical scales
UG5 Perform one calculation using information from a graph

OBJECTIVE 5.1.1
Find the Average of a Set of Numbers

Content Scope

- Numbers to be averaged will be presented in a horizontal or vertical chart
- Entries will be one- or two-digit whole numbers
- Four or five numbers with no other numbers given except those to be averaged
- Correct average will always be a whole number

Question Format

- A question requiring the student to find an average

Strategy

Spelling Grades

98	70	84	96

Find the average of Joe's spelling grades.

1. Read the question.
2. Find the key words including the word average. (Find the average)
3. Copy the numbers from the table in a vertical format.

4. Add the numbers.

$$\begin{array}{r} 98 \\ 70 \\ +\ 84 \\ \underline{96} \\ 348 \end{array}$$

5. Count the items that were added. (4)

6. Divide the sum by this number.

$$\begin{array}{r} 87 \\ 4\overline{)348} \\ \underline{32} \\ 28 \\ \underline{28} \end{array}$$

Vocabulary

* Average--the number determined by dividing the sum of the addends by the number of addends

Addends

Common Errors

1. Omitting the division operation
2. Omitting a value in the addition process
3. Adding or dividing whole numbers incorrectly
4. Using an incorrect divisor

Task Analysis (Skills)

AV1 Recognize the phrase "Find the average" or "What is the average?" as requiring the two-part process of addition and division
AV2 Line up numbers in a column
AV3 Find the average of a set of numbers

DOMAIN 7
PROBLEM SOLVING

OBJECTIVE 2.1.14
Use a Simple Formula

Content Scope

- Maximum of one set of parentheses
- No exponents, percents, irrational constants
- No more than four calculations
- No more than two different operations must be performed in the formula
- Unknown is isolated to left of equal sign
- Formula will contain no more than 3 variables for which values have to be substituted
- Addition and subtraction represented by + and −
- Multiplication will have no symbol
- Division represented by fraction
- Variables on the right side of the equation will be either all upper or all lower case letters; no combinations

Question Format

- Solve for D
  $D = RT$
  $R = 8$
  $T = 2$

Strategy

Solve for C
$C = a + b$
$a = \$15.98$
$b = \$2.50$

1. Substitute given values for formula symbols in the equation.

Example: Formula: $C = a + b$
Given: $a = \$15.98$
$b = \$2.50$

$C = \$15.98 + \$2.50$

2. Solve the equation. $C = \$18.48$

3. Check all work for computation errors.

For other formulas:

1. Be aware that the multiplication times sign is omitted in a formula. (a times b) is expressed as ab.

   Examples: wy means the value of w times the value of y
   3n means 3 times the value of n

2. When there are parentheses in the formula, do the work inside the parentheses first. Then remove the parentheses and perform the remaining operations.

   Examples: $3(a + b)$ means add the value of a and the value of b; multiply the answer by 3

   Formula: $D = c + (a - b)$
   Given: $C = 12,\ a = 4,\ b = 3$

   $D = 12 + (4 - 3)$
   $D = 12 + (1)$
   $D = 12 + 1$
   $D = 13$

3. When there is a fraction bar, do the work on top and the work on the bottom. Then divide the bottom into the top.

   Examples: $\frac{a + b}{c}$ means add the value of a and the value of b; divide the answer by the value of c

   $\frac{3}{ab}$ means multiply the value of a times the value of b; divide the answer into 3

4. When two or more operations are indicated, perform them in the following order: multiply, divide, add, subtract.

   * Example: $\frac{4}{a} - bc + 2$ means

   * Note: No more than two different operations will be performed in this section of the MFMT.

   A. Multiply the value of b times the value of c.
   B. Divide 4 by the value of a.
   C. Add the answer to (1) and 2.
   D. Subtract the answer to (3) from the answer to (2).

Vocabulary

Variable--a letter
Formula--a rule expressed in symbols
Solve--perform the indicated operations
Equation--symbols and/or number values arranged so that the quantities on the two sides of the equal sign are equal to each other
Substitute--exchange one value for another
Value--the number for a particular variable
Parentheses--( ); used to set off an operation to be performed by itself
Symbol--something that stands for something else

Common Errors

1. Making arithmetic errors
2. Performing operations in the wrong order (work within parentheses is not performed first)
3. Omitting operations (when ab means 2 times 3, students may write 23)
4. Substituting values incorrectly in a formula
5. Omitting necessary data
6. Selecting the wrong process

Task Analysis (Skills)

UF1 Identify a formula
UF2 Substitute numbers for the variables in the formula
UF3 Interpret "bh" to mean b times h
UF4 Interpret "d/2" to mean d divided by 2
UF5 Compute according to the order of operations (parentheses)
UF6 Compute according to the order of operations (multiply, divide, add, subtract)
UF7 Compute according to the order of operations (fractions)

OBJECTIVE 4.1.1
Choose a Reasonable Answer for a Mathematical Problem

Content Scope

- Money problems are always rounded off to the nearest dollar
- A work or problem situation involves 1 or 2 operations of addition, subtraction, multiplication, or division
- May include a display representing all or part of a pertinent document containing some or all of the numerical values needed for the problem
- Problem will ask for an approximate answer rather than an exact one

Question Format

- Written word problem using the underlined word "About"

Strategy

A pair of socks is on sale for $.98 a pair. About how much would five pairs of socks cost?

I. Strategy A

1. Read the problem
2. Find the key words. ($.98 a pair, five pairs, cost about how much)
3. Decide on the operation. (multiply)
4. Round off the given numbers. ($.98 rounds off to $1.00)
5. Perform the appropriate operation ($1.00 times 5 = $5.00)
6. Choose the number closest to your answer. ($5.00)

II. Strategy B

1. Read the problem
2. Find the key words. ($.98 a pair, five pairs, cost about how much)
3. Decide on the operation. (multiply)
4. Perform the appropriate operation ($.98 times 5 = $4.90)
5. Choose the number closest to your answer. ($5.00)

Vocabulary

* About--means to round off the answer

Round Off--a technique for converting numbers to a form which makes it easier to manipulate them mathematically

Estimate--a mathematical process of using rounded-off numbers to approximate an answer

Common Errors

1. Making computation errors
2. Selecting the wrong operations (i.e. adding instead of subtracting)
3. Not rounding off correctly

Task Analysis (Skills)

KW1 Select key words and phrases in a word problem
KW2 Select an operation from key words and phrases
RA1 Round off numbers
RA2 Choose a reasonable answer for a mathematical problem

OBJECTIVE 5.1.2
Solve Money Problems Using Addition and Subtraction

Content Scope

- All numbers will be whole numbers or decimal numbers
- A single addition operation may have up to three addends
- A subtraction problem will always have a minuend that is greater than a subtrahend

Question Format

- Written word problem

Strategy

At the end of August, Sally's bank account had $88.60 in it. At the end of September, it had $52.20. How much money had been taken out of Sally's account during the month of September?

1. Read the problem carefully.
2. Re-read the problem to pick out key words. (taken out)
3. Decide what is being asked for. (the difference between $88.60 and $52.20)
4. Decide which arithmetic operation is required to solve the problem. (subtract)
5. Perform the appropriate operation.

$$\begin{array}{r} \$88.60 \\ \underline{-\ 52.20} \\ \$36.40 \end{array}$$

6. Check to see that your answer is reasonable. (Sally had $88.60 in her account to begin with. The amount that was taken out had to be less than $88.60 and $36.40 is.)

Vocabulary

See MFMT Vocabulary in APPENDIX A.

Common Errors

1. Making computational errors
2. Selecting the wrong operation (i.e. add instead of subtract)

Task Analysis (Skills)

KW1 Select key words and phrases in a word problem
KW2 Select an operation from key words and phrases
MAS1 Solve money problems using addition and subtraction

OBJECTIVE 5.1.3
Solve Money Problems Using Multiplication and Division

Content Scope

- All numbers will be whole numbers or decimal numbers
- Multiplication operations require multiplying a decimal number by a one- or two-digit whole number
- The quotient will have two decimal places and no remainders
- Division problems consist of dividing a decimal number by a one- or two-digit whole number

Question Format

- Written word problem

Strategy

Five people went out to dinner together. They decided to split the cost of the dinner evenly among themselves. If the dinner cost $72.00, how much does each person pay?

1. Read the problem carefully.
2. Re-read the problem to pick out key words. (split, each)
3. Decide what is being asked for. (what each person pays)
4. Decide which arithmetic operation is required to solve the problem. (divide)
5. Perform the appropriate operation.

```
     $14.40
  5 ) $72.00
      5
      22
      20
       2 0
       2 0
       0 00
       0 00
```

6. Check to see that your answer is reasonable.

Vocabulary

Average—a mathematical process of dividing the total by the number of parts
Quantity—the number of items
Unit price—the price of one item

Common Errors

1. Making computational errors
2. Selecting the wrong operation (i.e. multiply instead of divide)

Task Analysis (Skills)

KW1	Select key words in a word problem
KW2	Select an operation from key words and phrases
MMD1	Solve money problems using multiplication and division

OBJECTIVE 5.1.4
Solve Problems Using Percents

Content Scope

- Problem will be to find the percent of a whole number
- Percents will have one digit or be two-digit multiples of five
- The whole numbers will have two or three digits
- Problems will deal with finding amounts of discount, commission, or sales tax

Question Format

- Written word problem

Strategy

Cheryl's father borrowed $900 from the credit union for her braces. If he has repaid 25% of the loan so far, how much has he repaid?

1. Read the problem.
2. See if the word problem has a percent for one of its numbers. (25%)
3. Locate the number and percent. ($900 and 25%)
4. Change the percent to a decimal. (25% = .25)
5. Multiply the decimal times the number.

$$\begin{array}{r} \$900 \\ \underline{\times\ .25} \\ 4500 \\ \underline{18000} \\ \$22500 \end{array}$$

6. Put the decimal point in the answer. ($225.00)
7. Check to see that it is a reasonable answer. (25% is 1/4 of the loan and $225.00 is much less than $900 so it should be right.)

Vocabulary

Discount--an amount deducted from the original price

Commission--an amount (paid to a salesperson or to an agency) that is a percent of the amount of the sales

Sales tax--an amount (paid to the government) that is a percent of the sale and is added on to the sale price

Down payment--an initial partial payment made towards the total cost of an item

%--percent means per hundred or for every hundred

Common Errors

1. Placing the decimal point incorrectly in the answer
2. Making arithmetic errors
3. Changing a percent to a decimal incorrectly

Task Analysis (Skills)

PD3	Rename percents as decimals
PN2	Find a percent of a number
MD2	Place the decimal point in the product correctly, with up to two decimal places
MUP1	Solve problems using percents

OBJECTIVE 5.1.5
Make Change

Content Scope

- $20 bill is the largest amount tendered
- Only one mathematically correct answer (For example, if $.25 were the correct change, only 1 quarter would appear as the answer--not 5 nickels, etc.)
- Only quarters, nickels, dimes, and pennies are used for coins

Question Format

- A problem is presented followed by a question: "If you gave the clerk a five-dollar bill, what is your change?" Answers are listed as various numbers of bills and coins.

Example: two one-dollar bills, two quarters, one penny

Strategy

The bill for your dinner is $7.59. You gave the waitress one ten-dollar bill. What is your change?

1. Read the problem.
2. Find the key words. (change)
3. Decide on the correct operation(s). (subtract)
4. Perform the operation.

$$\begin{array}{r}\$10.00\\ -\ 7.49\\ \hline \$2.51\end{array}$$

5. Change the answer to the minimum number of bills and coins.
   (two one-dollar bills, two quarters, one penny)

Vocabulary

Cash tendered--amount of money handed to the cashier to pay for a purchase
Denomination--the names given coins or bills of differing values
Invoice--a bill or receipt

Common Errors

1. Making arithmetic errors
2. Incorrectly converting a computed monetary value to a combination of coins and bills

   Example: $3.17 = 3 one-dollar bills, 2 nickels, and 2 pennies
   (should be 3 nickels)

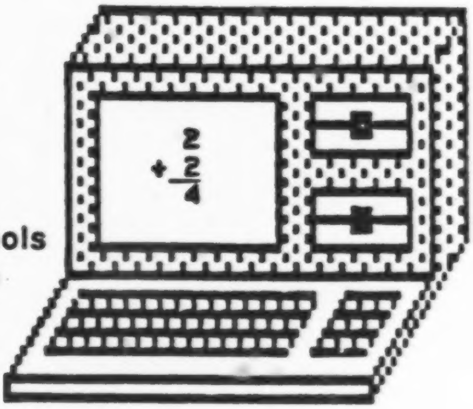
Task Analysis (Skills)

MC1 Identify the value of a penny, a nickel, a dime, and a quarter
MC2 Write one-, five-, ten-, and twenty-dollar bills as $1.00, $5.00, $10.00, and $20.00
KW1 Select key words and phrases in a word problem
KW2 Select an operation from key words and phrases
MC3 Convert a sum of money into the fewest bills and coins
MC4 Solve money problems involving making change

INTEGRATING COMPUTER SOFTWARE INTO THE FUNCTIONAL MATHEMATICS CURRICULUM: A DIAGNOSTIC APPROACH

SECTION TWO

ASSESSMENT MATERIALS



Effective Computer Instruction
for
Effective Special Education

Prince George's County Public Schools
Department of Special Education
1989

PRE-TEST AND POST-TEST ANSWER KEY

Number Concepts

page II-13

	MFMT Objective
1. A	3.1.1
2. A	3.1.1
3. B	3.1.1
4. D	3.1.1
5. C	3.1.1
6. A	3.1.1
7. C	3.1.1
8. A	3.1.1
9. D	3.1.2
10. C	3.1.2
11. A	3.1.2
12. B	3.1.2
13. C	3.1.3
14. D	3.1.3
15. B	3.1.3
16. B	3.1.3
17. B	3.3.1
18. C	3.3.1
19. A	3.3.1
20. D	3.3.1

Whole Number Operations

page II-57

	MFMT Objective
1. C	2.1.1
2. D	2.1.1
3. D	2.1.1
4. C	2.1.1
5. D	2.1.1
6. B	2.1.2
7. A	2.1.2
8. B	2.1.2
9. D	2.1.2
10. A	2.1.2
11. B	2.1.3
12. C	2.1.3
13. A	2.1.3
14. C	2.1.3
15. D	2.1.3
16. B	2.1.4
17. B	2.1.4
18. A	2.1.4
19. D	2.1.4
20. A	2.1.4

Mixed Number/Fraction Operations

page II-129

	MFMT Objective
1. D	2.1.5
2. D	2.1.5
3. A	2.1.5
4. A	2.1.5
5. C	2.1.5
6. B	2.1.6
7. D	2.1.6
8. B	2.1.6
9. A	2.1.6
10. C	2.1.6
11. B	2.1.7
12. B	2.1.7
13. D	2.1.7
14. B	2.1.7
15. B	2.1.7
16. A	2.1.13
17. D	2.1.13
18. C	2.1.13
19. A	2.1.13
20. D	2.1.13

Decimal Operations

page II-169

	MFMT Objective
1. D	2.1.8
2. B	2.1.8
3. A	2.1.8
4. A	2.1.8
5. D	2.1.9
6. B	2.1.9
7. B	2.1.9
8. A	2.1.9
9. C	2.1.10
10. A	2.1.10
11. C	2.1.10
12. B	2.1.10
13. A	2.1.11
14. D	2.1.11
15. C	2.1.11
16. B	2.1.11
17. B	2.1.12
18. D	2.1.12
19. C	2.1.12
20. A	2.1.12

USING DATA

page II-255

	MFMT Objective
1. B	2.3.1
2. D	2.3.1
3. D	2.3.1
4. C	2.3.1
5. A	2.3.1
6. D	2.3.1
7. A	2.3.2
8. C	2.3.2
9. B	2.3.2
10. B	2.3.2
11. C	2.3.2
12. A	2.3.2
13. A	5.1.1
14. C	5.1.1
15. C	5.1.1
16. C	5.1.1
17. D	5.1.1
18. C	5.1.1
19. B	5.1.1
20. B	5.1.1

MEASUREMENT

page II-209

	MFMT Objective
1. D	2.2.1
2. B	2.2.1
3. C	2.2.1
4. C	2.2.1
5. B	2.2.1
6. A	3.2.1
7. B	3.2.1
8. D	3.2.1
9. A	3.2.1
10. B	3.2.1
11. C	3.2.2
12. C	3.2.2
13. B	3.2.2
14. A	3.2.2
15. B	3.2.2
16. C	5.1.6
17. B	5.1.6
18. D	5.1.6
19. B	5.1.6
20. B	5.1.6

PROBLEM SOLVING

page II-295

	MFMT Objective
1. A	2.1.14
2. D	2.1.14
3. A	2.1.14
4. D	2.1.14
5. D	4.1.1
6. C	4.1.1
7. D	4.1.1
8. C	5.1.3
9. C	5.1.2
10. B	5.1.2
11. C	5.1.2
12. C	5.1.3
13. A	5.1.3
14. B	5.1.3
15. A	5.1.3
16. A	5.1.4
17. C	5.1.4
18. A	5.1.4
19. D	5.1.5
20. A	5.1.5

DIAGNOSTIC EVALUATION ANSWER KEY

1. Number Concepts

Write Numbers in Words and Digits (3.1.1) page II-21

1. 9
2. 7
3. 1
4. 7
5. 8
6. C
7. B
8. A
9. D
10. D
11. C
12. C
13. A
14. B
15. D
16. A
17. C
18. A
19. B
20. D
21. C
22. A
23. C
24. B
25. B
26. A
27. B
28. C
29. A
30. D
31. A
32. B
33. C
34. A
35. C
36. C
37. D
38. C
39. A
40. C
41. A
42. B
43. C
44. B
45. B
46. B
47. A
48. C
49. D
50. A

51. fifty-three and four hundredths
52. seven thousand forty-two
53. 6,245
54. 56.2

Rename Fractions as Percents (3.1.2) page II-39

1. 33 1/3
2. 66 2/3
3. C
4. A
5. C
6. B

Rename Percents as Decimals (3.1.3) page II-45

1. 378.
46.
2953.
748.

2. 90.30
.05
2.67
58.37
.16

3. .23
.52
.06

4. B
5. A

Order Decimals (3.3.1) page II-51

1. 7.1
39.64
.08
7.

2. 960.05
35.
94.6
1.65

3. .557
4. .606
5. .999
6. A
7. B
8. D
9. C
10. B
11. D
12. B

2. Whole Number Operations

Add Whole Numbers (2.1.1) page II-59

Part I	Part II	Part III	Part IV	Part V	Part VI
1. C	1. C	1. B	1. C	1. A	1. B
2. A	2. A	2. B	2. A	2. D	2. A
3. D	3. D	3. A	3. C	3. B	3. A
4. D	4. A	4. C	4. A	4. B	4. C
5. B	5. A	5. A	5. B	5. D	5. B
6. C	6. D	6. C	6. B	6. A	6. A

Subtract Whole Numbers (2.1.2) page II-79

Part I	Part II	Part III	Part IV	Part V
1. A	1. C	1. C	1. D	1. B
2. D	2. A	2. A	2. C	2. D
3. B	3. D	3. D	3. D	3. A
4. C	4. B	4. C	4. A	4. B
5. D	5. A	5. A	5. D	5. D
6. C	6. D	6. D	6. C	6. C

Multiply Whole Numbers (2.1.3) page II-97

Part 1	Part II	Part III	Part IV
1. D	1. C	1. B	1. C
2. A	2. A	2. B	2. A
3. A	3. A	3. A	3. D
4. B	4. A	4. A	4. B
5. D	5. B	5. C	5. D
6. B	6. C	6. B	6. B

Divide Whole Numbers (2.1.4) page II-109

Part I	Part II		Part III	Part IV	
1. C	1. B	8. B	1. C	1. B	7. C
2. D	2. C	9. B	2. D	2. D	8. D
3. B	3. D	10. C	3. A	3. B	9. C
4. B	4. B	11. C	4. A	4. D	10. B
5. C	5. D	12. A	5. A	5. C	11. B
6. A	6. B	13. A	6. B	6. A	12. A
	7. A	14. D			

3. Mixed Number/Fraction Operations

Prerequisite Skills page II-131

1. 1/6; 6 5/6

2. 3/4; 3/5; 3 3/8

3. C
4. B
5. C
6. A
7. A
8. C

9. 1 1/5; 1 3/7; 1 1/10; 1 3/4

10. 1/2; 3/10; 1/3; 1/4

11. 1/2; 1/2; 3/4; 3/10; 1/3

12. a. 6 b. 15 c. 12
d. 20 e. 6 f. 15

13. a. 3/6 b. 6/8 c. 10/15
d. 6/10 e. 10/12 f. 18/21

Add Mixed Numbers (2.1.5) page II-139

Part I	Part II	Part III	Part IV
1. B	1. B	1. A	1. A
2. A	2. B	2. C	2. A
3. D	3. C	3. D	3. C
4. B	4. C	4. A	4. C
5. C	5. A	5. B	5. B
6. D	6. C	6. A	6. D

Subtract Mixed Numbers (2.1.6) page II-151

Part I	Part II	Part III	Part IV
1. C	1. C	1. C	1. C
2. A	2. B	2. A	2. C
3. C	3. A	3. C	3. C
4. B	4. C	4. A	4. A
5. D	5. C	5. D	5. C
6. D	6. B	6. D	6. D

Multiply a Whole Number by a Fraction (2.1.7) page II-161

1. B 2. D 3. B 4. C 5. B 6. D

Find a Missing Term in a Proportion (2.1.13) page II-165

1. 1 2. 7 3. 7 4. 15 5. 9 6. 9

4. Decimal Operations

Add Decimals (2.1.8) page II-171

1. A
2. B
3. A
4. A
5. B
6. A
7. D
8. A
9. C
10. C
11. D
12. C
13. C
14. B
15. A
16. C
17. A
18. B
19. C
20. D

Subtract Decimals (2.1.9) page II-181

1. A
2. B
3. C
4. D
5. A
6. B
7. D
8. C
9. B
10. A
11. C
12. C

Multiply Decimals (2.1.10) page II-187

1. C
2. C
3. D
4. A
5. A
6. D
7. D
8. D
9. C
10. B
11. 41.04
12. 33.138
13. 504
14. 42.756

Divide Decimals (2.1.11) page II-195

1. A
2. B
3. B
4. B
5. 2.8
6. 13.3
7. .67
8. 13.05
9. 86.9
10. .5
11. .41
12. 1.9
13. 23.8
14. .93

Find a Percent of a Number (2.1.12) page II-203

1. A
2. B
3. A
4. B
5. D
6. C
7. A
8. B
9. 52.25
10. 40.5
11. 1.17
12. 19.04

5. Measurement

Read Scales on Measuring Instruments (2.2.1) page II-215

1. B
2. C
3. A
4. A = 3 cm
   B = 5 1/2 cm
   C = 9 cm
   D = 11 1/2 cm
5. 200 mL
6. 30° C

Find Perimeter and Area of Simple Polygons 3.2.1) page II-221

Part I

1. H
2. J
3. G
4. A
5. F
6. L
7. 28 cm
8. 67 m
9. 40 mm

Part II

1. 64 cm^2
2. 45 mm^2
3. 140 m^2
4. 20 km^2
5. 225 km^2
6. 25mm^2
7. cm^2
8. m^2
9. km^2
10. mm^2

Choose an Appropriate Unit of Measure (3.2.2) page II-229

1. length
2. capacity
3. volume
4. cm^3
5. g
6. mm^2
7. cm^3
8. L
9. m
10. cm
11. m^2
12. cm^3

Find Elapsed Time (5.1.6) page II-237

Part I

1. 5:20 P.M.
2. 12:10 P.M.
3. 5:45 A.M.
4. 1
5. 3
6. 1/2
7. not listed
8. 9:20 P.M.
9. 2 hrs. & 35 min.
10. 3:20 P.M.
11. not listed
12. 40 min.

Part II

1. D
2. A
3. D
4. A
5. C
6. B

Part III

1. C
2. D
3. C
4. B
5. D
6. B

Part IV

1. 2:05 P.M.
2. 10:35 A.M.
3. 11:25 P.M.
4. 52 min.
5. 2 hrs. & 45 min.
6. 10 hrs. & 30 min.
7. 9:45 A.M.
8. 8:05 P.M.
9. 1:45 P.M.
10. 2 hrs.,10 min.
11. 4:11 P.M.
12. 12:50 P.M.

6. Using Data

Use Information from Tables (2.3.1) page II-263

1. 4
2. 6 lb.
3. It costs the next higher rate.
4. how much more, 2 lb. package, zone 2, zone 1
5. total cost, 3 lb. package, zone 4, 4 lb. package, zone 2
6. 5 lb. package, $1.87, which zone
7. zones
8. weight, zone
9. fraction, rate
10. $1.49
11. zone 4
12. 6 lb., zone 2

Use Information from Graphs (2.3.2) page II-273

1. C
2. A
3. taxes
4. how much more,
   travel, taxes
5. how much, all together,
   salaries, travel, rent
6. B
7. A
8. 35%
9. students
10. Laura
11. $75.00
12. 5
13. $25.00
14. 6
15. 2
16. 2%
17. difference
18. B
19. 8%
20. 15
21. 150
22. 5
23. A
24. Febr.? 55
    March? 40
    April? 35
    June? 40

Find the Average of a Set of Numbers (5.1.1) page II-289

1. 18
   84
   10
   20
2. 26
   25
   82
   4
   13
3. 6
   18
   43
   21
4. add
5. divide
6. 72
7. 15

7. Problem Solving

Use a Simple Formula (2.1.14) page II-301

Part I
1. $D = RT$
2. $D = M/V$
3. $A = (LW)(3M)$
4. $V = LWH$
5. $S = \frac{W-10E}{5}$
6. $B = 10 + 2 - 8$
7. $H = \frac{3+5}{2} + 15$
8. $J = 4 + 6 + 8$
9. $A = 1/2\ (7)\ (12)$

Part II
1. 12
2. 28
3. 27
4. 7
5. 4
6. 2
7. 27
8. 9
9. 7

Part III
1. 9
2. 22
3. 15
4. 2
5. 9
6. 1

Choose a Reasonable Answer for a Mathematical Problem (4.1.1) page II-319

Part I
1. \$22.98, \$16.89, \$.89, about how much
2. A
3. \$26.96, \$18.40, about how much more
4. B
5. \$518, per person, about how much, 21 students
6. C

	Tens	Hundreds	Thousands
7.	2,650	2,700	3,000
8.	510	500	1,000
9.	30	0	0
10.	100	100	0

Part II

1. D 2. C 3. D 4. A

Solve Money Problems Using Addition and Subtraction (5.1.2) page II-327

Part I
1. $13.75, $1.42, $83.00, total amount
2. $20.00, $17.14, how much change
3. $5.00, $2.50, 60¢, how much...left
4. add
5. subtract
6. add
7. subtract
8. subtract
9. subtract
10. add
11. add
12. subtract

Part II
1. A 2. A 3. C 4. D

Solve Money Problems Using Multiplication and Division (5.1.3) page II-333

Part I
1. $32.72, 8 hours, how much...per hour
2. total, 9 sandwiches, $1.85 per sandwich
3. how much...each pay, 12 members, $26.40
4. divide
5. divide
6. divide
7. multiply
8. divide
9. divide
10. multiply
11. multiply
12. multiply
13. divide

Part II
1. A 2. D 3. B 4. B

Solve Problems Using Percents (5.1.4) page II-339

1. A. .07
   B. .90 (or .9)
   C. .27
2. C
3. A
4. $2.00
5. $251.52
6. 392.0
7. $59.70
8. $.72
9. 580.3
10. C
11. A
12. A

Make Change (5.1.5) page II-347

Part I

1. A quarter
   B penny
   C nickel
   D penny
   E dime
   F quarter
   G dime
   H nickel
2. B
3. B
4. C
5. D

Part II

1. $18.65, twenty dollar bill, how much change
2. 60¢, $1.50, 45¢, what change, five dollar bill
3. $1.20, change, twenty dollar bill
4. (see chart below)
5. subtract
6. multiply
7. subtract

Chart:

	10 $ bill	5$ bill	1 $bill	quarter	dime	nickel	penny
$5.68		1		2	1	1	3
$14.30	1		4	1		1	
$2.98			2	3	2		3
$18.19	1	1	3		1	1	4

Part III

1. B
2. B
3. C

NUMBER CONCEPTS

PRE-TEST and POST-TEST

Name________________________________ Date____________________________

1. Choose the word name:

   983

   A. nine hundred eighty-three
   B. nine eight three
   C. nine hundred and eighty-three
   D. nine eighty-three

2. Choose the word name:

   391.45

   A. three hundred ninety-one and forty five hundredths
   B. three ninety-one point forty-five
   C. three nine one point four five
   D. three hundred and ninety-one and forty-five hundredths

3. Choose the word name:

   203.1

   A. two hundred and three and one tenth
   B. two hundred three and one tenth
   C. two hundred and three point one
   D. two hundred three point one

4. Choose the word name:

   0.06

   A. six thousandths
   B. six tenths
   C. point zero six
   D. six hundredths

5. Choose the number name:

   two hundred fifty-three

   A. 20053
   B. 200.53
   C. 253
   D. 235

6. Choose the number name:

   one hundred five

   A. 105
   B. 1005
   C. 1500
   D. 100.5

7. Choose the number name:

   three hundred ten and six tenths

   A. 310.06
   B. 310.610
   C. 310.6
   D. 310.06

8. Choose the number name:

   fifty and five tenths

   A. 50.5
   B. 50.05
   C. .55
   D. .55

9. Rename $\frac{1}{10}$ as a percent:

   A. 100%
   B. 1%
   C. $\frac{1}{10}$%
   D. 10%

10. Rename $\frac{7}{10}$ as a percent:

    A. 7%
    B. $14\frac{2}{7}$%
    C. 70%
    D. $142\frac{6}{7}$%

11. Rename $\frac{3}{5}$ as a percent:

    A. 60%
    B. $166\frac{2}{3}$%
    C. 6%
    D. $16\frac{2}{3}$%

12. Rename $\frac{3}{10}$ as a percent:

    A. 300%
    B. 30%
    C. $3\frac{1}{3}$%
    D. 3%

NUMBER CONCEPTS

PRE-TEST and POST-TEST (Continued)

3. Rename 6% as a decimal:

A. 0.006
B. 6.0
C. 0.06
D. 0.6

4. Rename 73% as a decimal:

A. 0.0073
B. 73.0
C. 7.3
D. 0.73

15. Rename 81% as a decimal:

A. 8.1
B. 0.81
C. 0.081
D. 81.0

16. Rename 57% as a decimal:

A. 57.0
B. 0.57
C. 0.0057
D. 5.7

17. Arrange the following numbers in order from least to greatest.

0.06, 0.6, 6.0, 0.006

A. 6.0, 0.6, 0.06, 0.006
B. 0.006, 0.06, 0.6, 6.0
C. 0.06, 6.0, 0.006, 0.6
D. 0.6, 6.0, 0.006, 0.06

18. Arrange the following numbers in order from least to greatest.

3.40, 0.6, 0.75, 10.5

A. 0.6, 10.5, 3.40, 0.75
B. 0.6, 0.75, 10.5, 3.40
C. 0.6, 0.75, 3.40, 10.5
D. 0.75, 0.6, 10.5, 3.40

19. Arrange the following numbers in order from least to greatest.

2.31, 0.324, 43.1, 12.3

A. 0.324, 2.31, 12.3, 43.1
B. 12.3, 2.31, 0.324, 43.1
C. 43.1, 0.324, 2.31, 12.3
D. 43.1, 12.3, 2.31, 0.324

20. Arrange the following numbers in order from least to greatest.

45.3, 0.601, 1.23, 3.2

A. 3.2, 1.23, 45.3, 0.601
B. 3.2, 45.3, 1.23, 0.601
C. 1.23, 3.2, 45.3, 0.601
D. 0.601, 1.23, 3.2, 45.3

Write Numbers In Words and Digits (3.1.1)

N1

1. Circle the digit in the **tenths** place:

34.92

N1

2. Circle the digit in the **hundredths** place:

3765.2

N1

3. Circle the digit in the **tens** place:

819.65

N1

4. Circle the digit in the **thousands** place:

7621

N2

5. Circle the digit in the **hundredths** place:

1.983

N2

6. Choose the word name:

12

A. twenty-one
B. twenty
C. twelve
D. three

N2

7. Choose the word name:

3

A. tree
B. three
C. there
D. thirty

N2

8. Choose the word name:

6

A. six
B. sixty
C. sixteen
D. seven

Write Numbers in Words and Digits (3.1.1)

N2

9. Choose the word name:

19

A. ninety-one
B. nine
C. ninety
D. nineteen

N4

10. Choose the word name:

40

A. four
B. four tenths
C. fourteen
D. forty

N4

11. Choose the word name:

70

A. seven
B. seventeen
C. seventy
D. seven tens

N4

12. Choose the word name:

50

A. five
B. fifteen
C. fifty
D. fivety

N4

13. Choose the word name:

80

A. eighty
B. eight
C. eighth
D. eighteen

N6

14. Choose the word name:

21

A. twelve
B. twenty-one
C. twenty one
D. two-one

N6

15. Choose the word name:

34

A. thirty four
B. three-four
C. seven
D. thirty-four

N6

16. Choose the word name:

65

A. sixty-five
B. sixteen-five
C. sixty five
D. six-five

Write Numbers in Words and Digits (3.1.1)

N6

17. Choose the word name:

97

A. ninety seven
B. ninty-seven
C. ninety-seven
D. nineteen-seven

N8

18. Choose the word name:

400

A. four hundred
B. four thousand
C. forty
D. four hundredths

N8

19. Choose the word name:

7,000

A. seventy
B. seven thousand
C. seventeen
D. seven hundred

N8

20. Choose the word name:

5,000

A. five hundred
B. fifty hundred
C. five thousandths
D. five thousands

N8

21. Choose the word name:

800

A. eighty-ten
B. eight thousand
C. eight hundred
D. eight

N10

22. Choose the word name:

1.2

A. one and two tenths
B. one hundred twenty
C. one hundred
D. one and two hundredths

N10

23. Choose the word name:

271.21

A. two hundred seventy-one
B. two hundred seventy-one and two hundreths
C. two hundred seventy-one and twenty-one hundreths

N10

24. Choose the word name:

5.8

A. fifty-eight hundreds
B. five and eight tenths
C. five hundred eighty
D. five and eight hundredths

Write Numbers in Words and Digits (3.1.1)

N10

25. Choose the word name:

.17

A. one hundred
B. seventeen hundredths
C. seventeen
D. seven tenths

N3

26. Choose the number name:

one

A. 1
B. 11
C. 100
D. .1

N3

27. Choose the number name:

four

A. 40
B. 4
C. .4
D. 14

N3

28. Choose the number name:

eleven

A. 1
B. .11
C. 11
D. 7

N3

29. Choose the number name:

fifteen

A. 15
B. 51
C. 1.5
D. 5

N5

30. Choose the number name:

twenty

A. 2
B. 12
C. 200
D. 20

N5

31. Choose the number name:

ninety

A. 90
B. 9.0
C. 19
D. 900

N5

32. Choose the number name:

thirty

A. 13
B. 30
C. 300
D. 3.0

Write Numbers in Words and Digits (3.1.1)

N5

33. Choose the word name:

sixty

A. 600
B. 16
C. 60
D. 6.0

N7

34. Choose the number name:

fifty-six

A. 56
B. 65
C. 506
D. 5.6

N7

35. Choose the number name:

eighty-one

A. 18
B. 8
C. 81
D. 801

N7

36. Choose the number name:

thirty-five

A. 305
B. 53
C. 35
D. 30.5

N7

37. Choose the number name:

forty-eight

A. 480
B. 4.8
C. 84
D. 48

N9

38. Choose the number name:

nine hundred

A. 0.09
B. 9,000
C. 900
D. 9.00

N9

39. Choose the number name:

three thousand

A. 3,000
B. 0.003
C. 31,000
D. 30

N9

40. Choose the number name:

seven hundred

A. 70
B. 7,000
C. 700
D. 7.00

Write Numbers In Words and Digits (3.1.1)

N9

41. Choose the word name:

five thousand

A. 5,000
B. 5.000
C. 500
D. 51,000

N11

42. Choose the number name:

four and two tenths

A. 42
B. 4.2
C. 420
D. 5

N11

43. Choose the number name:

twenty-seven hundredths

A. .002
B. .027
C. .27
D. 2.7

N11

44. Choose the number name:

two tenths

A. 200
B. .2
C. 2
D. 02

N11

45. Choose the number name:

nine hundred eighty-one and five tenths

A. 981
B. 981.5
C. 9,815
D. 981.05

N12

46. Choose the word name:

83.62

A. eight thousand, three hundred sixty-two
B. eighty-three and sixty-two hundredths
C. eight hundred, thirty-six and two tenths

N12

47. Choose the word name:

9.04

A. nine and four hundredths
B. nine hundred, four
C. ninety and four tenths
D. ninety-four tenths

N12

48. Choose the number name:

two thousand, six hundred forty-eight

A. 26.48
B. 264.8
C. 2648

Write Numbers in Words and Digits (3.1.1)

N12

49. Choose the number name:

three hundred one and nine hundredths

A. 3,013.9
B. 310.39
C. 30.139
D. 301.09

N12

50. Choose the number name:

nineteen and three tenths

A. 19.3
B. 1.93
C. 193
D. 91.3

N13

51. Write the word name for:

53.04

N13

52. Write the word name for:

7,042

N13

53. Write the number name for:

six thousand two hundred forty-five

N13

54. Write the number name for:

fifty-six and two tenths

SKILL SHEET

3.1.1 WRITE NUMBERS IN WORDS AND DIGITS

____

____

SKILL SHEET

3.1.1 WRITE NUMBERS IN WORDS AND DIGITS

N1 IDENTIFY PLACE VALUE

1. Circle the digit in the **tens** place:

   4,653.29

2. Circle the digit in the **hundreds** place:

   4,653.29

3. Circle the digit in the **thousands** place:

   4,653.29

4. Circle the digit in the **tenths** place:

   4,653.29

5. Circle the digit in the **hundredths** place:

   4,653.29

SKILL SHEET

3.1.1 WRITE NUMBERS IN WORDS AND DIGITS

N2 IDENTIFY WORD NAMES FOR ONE THROUGH NINETEEN

Directions: Draw a line from the number name to the word name.

1. 12
2. 7
3. 15
4. 3
5. 1
6. 19
7. 6
8. 5
9. 8
10. 10

A. one
B. fifteen
C. twelve
D. seven
E. three
F. five
G. eight
H. ten
I. nineteen
J. six

SKILL SHEET

3.1.1 WRITE NUMBERS IN WORDS AND DIGITS

N3 WRITE DIGITS FOR WORDS ONE THROUGH NINETEEN

Directions: Write the number name.

1. four ________
2. seventeen ________
3. one ________
4. ten ________
5. sixteen ________
6. two ________
7. eleven ________
8. nine ________
9. fourteen ________
10. thirteen ________

____

____

SKILL SHEET

3.1.1 WRITE NUMBERS IN WORDS AND DIGITS

N4 IDENTIFY WORD NAMES FOR 20, 40....

Directions: Draw a line from the number name to the word name.

1. 20	A. fifty
2. 50	B. thirty
3. 70	C. seventy
4. 30	D. twenty
5. 80	E. ninety
6. 90	F. sixty
7. 40	G. eighty
8. 60	H. forty

____

____

SKILL SHEET

3.1.1 WRITE NUMBERS IN WORDS AND DIGITS

N5 WRITE DIGITS FOR WORDS TWENTY, THIRTY, FORTY...

Directions: Write the number name.

1. thirty ________
2. seventy ________
3. forty ________
4. ninety ________
5. fifty ________
6. eighty ________
7. twenty ________
8. sixty ________

SKILL SHEET

3.1.1 WRITE NUMBERS IN WORDS AND DIGITS

N6 IDENTIFY HYPHENATED NUMBER WORDS FOR 21,22...99

Directions: Draw a line from the number name to the word name.

1. 24
2. 91
3. 67
4. 32
5. 75
6. 48
7. 83
8. 56

A. thirty-two
B. twenty-four
C. ninety-one
D. sixty-seven
E. forty-eight
F. fifty-six
G. seventy-five
H. eighty-three

SKILL SHEET

3.1.1 WRITE NUMBERS IN WORDS AND DIGITS

N7 WRITE DIGITS FOR HYPHENATED NUMBER WORDS FROM TWENTY-ONE THROUGH NINETY-NINE

Directions: Write the number name.

1. fifty-three ________
2. twenty-six ________
3. eighty-four ________
4. sixty-one ________
5. thirty-seven ________
6. ninety-five ________
7. forty-two ________
8. seventy-eight ________

____

____

SKILL SHEET

3.1.1 WRITE NUMBERS IN WORDS AND DIGITS

N8 IDENTIFY THE WORD NAMES FOR HUNDRED AND THOUSAND

Directions: Draw a line from the number name to the word name.

1. 300	A. nine hundred
2. 5,000	B. seven thousand
3. 7,000	C. three hundred
4. 6,000	D. five thousand
5. 900	E. six thousand
6. 500	F. three thousand
7. 3,000	G. six hundred
8. 9,000	H. nine thousand
9. 600	I. five hundred
10. 700	J. seven hundred

____

____

SKILL SHEET

3.1.1 WRITE NUMBERS IN WORDS AND DIGITS

N9 WRITE THE DIGITS FOR HUNDRED AND THOUSAND

Directions: Write the number name.

1. one hundred ____________
2. four thousand ____________
3. two thousand ____________
4. eight hundred ____________
5. four hundred ____________
6. one thousand ____________
7. eight thousand ____________
8. two hundred ____________

SKILL SHEET

3.1.1 WRITE NUMBERS IN WORDS AND DIGITS

N10 IDENTIFY WORD NAMES FOR TENTHS AND HUNDREDTHS

1. Choose the word name:

85.5

A. eighty-five and five tenths
B. eight and fifty-five hundredths
C. eighty-five hundredths
D. eight hundred fifty-five

2. Choose the word name:

.98

A. eight tenths
B. ninety-eight hundredths
C. nine hundredths
D. ninety-eight

3. Choose the word name:

31.6

A. thirty-one and six tenths
B. three hundred sixteen
C. three thousand, one hundred sixty
D. thirty-one

4. Choose the word name.

94.3

A. nine thousand, four hundred thirty
B. ninety-four and three tenths
C. nine and forty-three hundredths
D. ninety-four and three hundredths

5. Choose the word name:

6.33

A. six and thirty-three hundredths
B. six hundredths
C. six
D. six hundred thirty-three

6. Choose the word name.

474.8

A. forty-seven and forty-eight hundredths
B. four hundred seventy-four and eight tenths
C. four hundred seventy-five
D. four and seventy-four hundredths

SKILL SHEET

3.1.1 WRITE NUMBERS IN WORDS AND DIGITS

N11 WRITE THE DIGITS FOR TENTHS AND HUNDREDTHS

1. Choose the number name:

twelve hundredths

A. .12
B. 12
C. .001
D. .2

2. Choose the number name:

eight and five tenths

A. .85
B. 8
C. 8.5
D. 850

3. Choose the number name:

seventy-nine and seven hundredths

A. 790.7
B. 7,907
C. 79.07
D. 79.007

4. Choose the number name:

two and six hundredths

A. 2.006
B. .02
C. 20.6
D. 2.06

5. Choose the number name:

eighty-two and six tenths

A. 82.6
B. 83
C. 826
D. 82.06

6. Choose the number name:

fifty-two and seventeen hundredths

A. 52.17
B. 52.017
C. 5,217
D. .521

SKILL SHEET

3.1.1 WRITE NUMBERS IN WORDS AND DIGITS

N12 RECOGNIZE THAT "AND" REPRESENTS THE DECIMAL POINT

Directions: Write the numbers in words.

A. 37.6 ______________________________

B. 376 ______________________________

C. 406 ______________________________

D. 4.06 ______________________________

Directions: Write these words as numbers.

E. sixty-three ____________

F. six and three tenths ____________

G. twenty-seven ____________

H. two and seven tenths ____________

____

____

SKILL SHEET

3.1.1 WRITE NUMBERS IN WORDS AND DIGITS

N13 WRITE NUMBERS IN WORDS AND DIGITS

I. Write the number name for the following:

1. SEVEN ______________
2. FIVE AND SIX TENTHS ______________
3. THIRTY-FOUR ______________
4. EIGHT HUNDRED SEVENTY-FIVE ______________
5. ONE ______________
6. NINE THOUSAND FOUR HUNDRED ______________
7. NINE THOUSAND AND FOUR TENTHS ______________
8. FIFTY-TWO ______________
9. SIX AND TWENTY-FIVE HUNDREDTHS ______________
10. FIVE TENTHS ______________

SKILL SHEET

3.1.1 WRITE NUMBERS IN WORDS AND DIGITS

N13 WRITE NUMBERS IN WORDS AND DIGITS

II. Write the word name for the following:

1. 6 ____

2. 90 ____

3. 52 ____

4. 376 ____

5. 4.8 ____

6. 8,721 ____

7. 9.45 ____

8. 1,005 ____

9. 100.05 ____

10. 16 ____

Rename Fractions as Percents (3.1.2)

P1

1. $\frac{1}{3}$ as a percent is

_________ %

P1

2. $\frac{2}{3}$ as a percent is

_________ %

P2

3. Rename $\frac{3}{4}$ as a percent:

A. $100\frac{1}{3}\%$

B. 67%
C. 75%
D. 750%

P2

4. Rename $\frac{1}{2}$ as a percent:

A. 50%
B. 5%
C. 500%
D. 2%

P1

5. Rename $\frac{2}{3}$ as a percent:

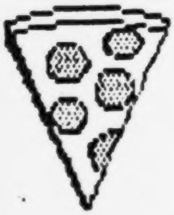
A. $.66\frac{2}{3}\%$ C. $6.6\frac{2}{3}\%$

B. $100\frac{1}{2}\%$ D. $66\frac{2}{3}\%$

P2

6. Rename $\frac{1}{4}$ as a percent:

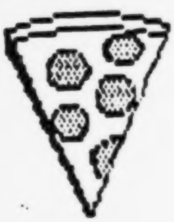
A. 24%
B. 25%
C. 2.5%
D. 23%



SKILL SHEET

3.1.2 RENAME FRACTIONS AS PERCENTS

P2 RENAME FRACTIONS AS PERCENTS



SKILL SHEET

3.1.2 RENAME FRACTIONS AS PERCENTS
P1 RECALL FROM MEMORY....

Write the correct percent.

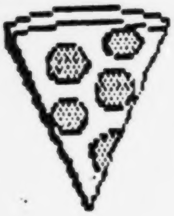
1. $\frac{1}{3} =$

2. $\frac{2}{3} =$

Write the correct fraction.

1. $66\frac{2}{3}\% =$

2. $33\frac{1}{3}\% =$



____

____

SKILL SHEET

3.1.2 RENAME FRACTIONS AS PERCENTS

P2 RENAME FRACTIONS AS PERCENTS

1. Rename $\frac{2}{5}$ as a percent:

____%

2. Rename $\frac{1}{4}$ as a percent:

____%

3. Rename $\frac{2}{10}$ as a percent:

____%

4. Rename $\frac{1}{3}$ as a percent:

____%

5. Rename $\frac{3}{5}$ as a percent:

____%

6. Rename $\frac{2}{4}$ as a percent:

____%

7. Rename $\frac{1}{2}$ as a percent:

____%

8. Rename $\frac{2}{3}$ as a percent:

____%

9. Rename $\frac{4}{10}$ as a percent:

____%

10. Rename $\frac{4}{5}$ as a percent:

____%

Rename Percents as Decimals (3.1.3)

PD1

1. Place the decimal point that is understood in each of the following whole numbers:

378
46
2953
748

PD2

2. Move the decimal point two (2) places to the left and rewrite:

9030. ____________
5. ____________
267. ____________
5837. ____________
16. ____________

PD3

3. Rename the percent as a decimal:

23% ____________

52% ____________

6% ____________

PD3

4. Choose the correct decimal for the percent:

85%

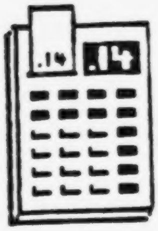
A. 85
B. .85
C. .085
D. 8.5

PD3

5. Choose the correct decimal for the percent:

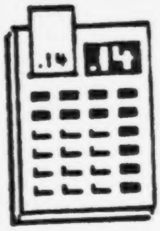
498%

A. 4.98
B. 498
C. .498
D. 49.8



SKILL SHEET

3.1.3 RENAME PERCENTS AS DECIMALS



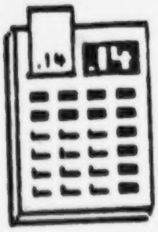
SKILL SHEET

3.1.3 RENAME PERCENTS AS DECIMALS

PD1 IDENTIFY THE CORRECT LOCATION OF A DECIMAL POINT

Directions: Put the decimal point in the correct place in these whole numbers.

1. 624
2. 87
3. 1360
4. 9
5. 185
6. 4862
7. 96
8. 5
9. 507
10. 71,700
11. 35
12. 518
13. 6342
14. 26
15. 3
16. 70
17. 1
18. 469
19. 9333
20. 12



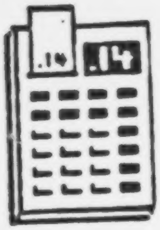
SKILL SHEET

3.1.3 RENAME PERCENTS AS DECIMALS

PD2 IDENTIFY THE LEFT DIRECTION

Direction: Move the decimal point two (2) places to the left.

1. 624.
2. 87.
3. 1360.
4. 9.
5. 185.
6. 4862.
7. 96 .
8. 5.
9. 507.
10. 71,700.
11. 35.
12. 518.
13. 6342.
14. 26.
15. 3.
16. 70.
17. 1.
18. 469
19. 9333.
20. 12.



SKILL SHEET

3.1.3 RENAME PERCENTS AS DECIMALS

PD3 RENAME THE PERCENT AS A DECIMAL

1. Rename **68%** as a decimal.
   - A. .68
   - B. .068
   - C. 68
   - D. 6.8

2. Rename **29%** as a decimal.
   - A. .029
   - B. .29
   - C. 2.9
   - D. 29

3. Rename **11%** as a decimal.
   - A. .011
   - B. 1.1
   - C. 11
   - D. .1

4. Rename **95%** as a decimal.
   - A. .095
   - B. .95
   - C. 95
   - D. 9.5

5. Rename **88%** as a decimal.
   - A. 88
   - B. .88
   - C. .088
   - D. 8.8

6. Rename as a decimal:

   5% = _____

7. Rename as a decimal:

   76% = _____

8. Rename as a decimal:

   32% = _____

9. Rename as a decimal:

   1% = _____

10. Rename as a decimal:

    100% = _____

Order Decimals (3.3.1)

OD1

1. Copy these numbers, lining up the decimal points.

7.1, 39.64, .08, 7

____

____

____

____

OD1

2. Copy these numbers, lining up the decimal points.

960.05, 35, 94.6, 1.65

____

____

____

____

OD2

3. Circle the smallest number in in the group.

5.57, .557, 55.7, 557

4. Circle the smallest number in the group.

60.61, 6.061, 606.1, .606

5. Circle the smallest number in the group.

70.3, 9.99, 7.03, .999

OD3

6. Arrange the following numbers in order from least to greatest.

10.1, 11.01, 11.11, 1.01

A. 1.01, 10.1, 11.01, 11.11
B. 11.11, 10.1, 1.01, 11.01
C. 11.01, 11.11, 1.01, 10.1
D. 10.1, 11.11, 11.01, 1.01

OD3

7. Arrange the following numbers in order from least to greatest.

5.08, 5.82, 9.7, 3.21

A. 5.08, 3.21, 9.7, 5.82
B. 3.21, 5.08, 5.82, 9.7
C. 3.21, 5.08, 9.7, 5.82
D. 5.08, 5.82, 9.7, 3.21

OD3

8. Arrange the following numbers in order from least to greatest.

3.02, 7.02, 4.1, 18.2

A. 3.02, 4.1, 18.2, 7.02
B. 4.1, 18.2, 3.02, 7.02
C. 3.02, 7.02, 18.2, 4.1
D. 3.02, 4.1, 7.02, 18.2

Order Decimals (3.3.1), cont.

OD3

9. Arrange the following numbers in order from least to greatest.

4.81, 84, 273.7, 1.8

A. 1.8, 273.7, 84, 4.81
B. 84, 273.7, 4.81, 1.8
C. 1.8, 4.81, 84, 273.7
D. 4.81, 84, 1.8, 273.7

OD3

10. Arrange the following numbers in order from least to greatest.

78, 3.52, 27, 4

A. 4, 27, 78, 3.52
B. 3.52, 4, 27, 78
C. 78, 4, 27, 3.52
D. 78, 3.52, 4, 27

OD3

11. Arrange the following numbers in order from least to greatest.

580.7, 6, 40.05, 932.7

A. 932.7, 6, 40.05, 580.7
B. 40.05, 932.7, 580.7, 6
C. 932.7, 40.05, 580.7, 6
D. 6, 40.05, 580.7, 932.7

OD3

12. Arrange the following numbers in order from least to greatest.

84.2, 6.13, 61.6, 90

A. 6.13, 84.2, 90, 61.6
B. 6.13, 61.6, 84.2, 90
C. 84.2, 90, 6.13, 61.6
D. 90, 6.13, 61.6, 84.2

3.3.1 ORDER DECIMALS

SKILL SHEET

SKILL SHEET

3.3.1 ORDER DECIMALS

ODI WRITE NUMBERS IN A COLUMN ACCORDING TO THE DECIMAL PLACE

Directions: Copy these numbers, lining up the decimal points.

1. 7, 26.3, 5.1, 5.95

2. 98.53, 158.3, 301.8, 316.19

3. 17.74, 575.8; 65, 7.9

4. 144.05, 8, 24, 44.14

5. 6.39, 31, 83.67, 1.69

6. 85.5, 89, 7.6, 3.1

SKILL SHEET

3.3.1 ORDER DECIMALS

OD2 IDENTIFY THE SMALLEST IN A GROUP OF NUMBERS

Directions: Circle the smallest number.

1.	18.1	2	.36	6
2.	960.05	94.6	35	12.63
3.	17.6	6.71	7.16	61.7
4.	7	8	329.26	1.41
5.	273.1	59.86	6.1	9.9

____

____

SKILL SHEET

3.3.1 ORDER DECIMALS

OD3 ARRANGE A GROUP OF NUMBERS FROM LEAST TO GREATEST

I. Copy the numbers in a vertical column.
II. Then rearrange the numbers in order from least to greatest.

Ex. **.16, 811.06, 89.5, 36**

STEP I.

.16
811.06
89.5
36.

STEP II.

least .16
36.
↓ 89.5
greatest 811.06

1. **725.6, 60.64, 20.57, 46.9**

______ least ______
______ ↓ ______
______
______ greatest ______

3. **273.1, 59.86, 6.1, 9.9**

______ least ______
______ ↓ ______
______
______ greatest ______

2. **5.57, 74, 8.26, 5**

______ least ______
______ ↓ ______
______
______ greatest ______

4. **7.1, 39.9, 47.6, 9.4**

______ least ______
______ ↓ ______
______
______ greatest ______

WHOLE NUMBERS

PRE-TEST and POST-TEST

Name ____________________ Date ____________________

1. ADD:

$$\begin{array}{r} 127 \\ +\ 48 \\ \hline \end{array}$$

A. 165
B. 265
C. 175
D. 275

2. ADD:

$493 + 761 =$

A. 1,154
B. 1,164
C. 1,264
D. 1,254

3. ADD:

$$\begin{array}{r} 75 \\ 130 \\ +\ 11 \\ \hline \end{array}$$

A. 106
B. 226
C. 116
D. 216

4. ADD:

$$\begin{array}{r} 4{,}780 \\ +\ 2{,}332 \\ \hline \end{array}$$

A. 8,012
B. 8,112
C. 7,112
D. 7,012

5. ADD:

$$\begin{array}{r} 2{,}406 \\ 1{,}742 \\ +\ 3{,}244 \\ \hline \end{array}$$

A. 7,492
B. 6,382
C. 6,483
D. 7,392

6. SUBTRACT:

$$\begin{array}{r} 287 \\ -\ 43 \\ \hline \end{array}$$

A. 233
B. 244
C. 234
D. 144

7. SUBTRACT:

$$\begin{array}{r} 839 \\ -\ 562 \\ \hline \end{array}$$

A. 277
B. 377
C. 337
D. 237

8. SUBTRACT:

$$\begin{array}{r} 6{,}703 \\ -\ 4{,}291 \\ \hline \end{array}$$

A. 2,592
B. 2,412
C. 2,492
D. 2,512

9. SUBTRACT:

$$\begin{array}{r} 2{,}530 \\ -\ 927 \\ \hline \end{array}$$

A. 2,417
B. 1,413
C. 1,403
D. 1,603

10. SUBTRACT:

$$\begin{array}{r} 25{,}016 \\ -\ 14{,}342 \\ \hline \end{array}$$

A. 10,674
B. 11,334
C. 10,774
D. 10,734

WHOLE NUMBERS

PRE-TEST and POST-TEST CONTINUED

Name____________________________ Date____________________________

11. MULTIPLY:

$$\begin{array}{r} 87 \\ \underline{\times\ 9} \end{array}$$

A. 792
B. 783
C. 723
D. 774

12. MULTIPLY:

$$\begin{array}{r} 593 \\ \underline{\times\ 6} \end{array}$$

A. 3,548
B. 3,058
C. 3,558
D. 3,468

13. MULTIPLY:

$$\begin{array}{r} 49 \\ \underline{\times\ 21} \end{array}$$

A. 1,029
B. 1,039
C. 147
D. 1,129

14. MULTIPLY:

$$\begin{array}{r} 948 \\ \underline{\times\ 3} \end{array}$$

A. 3,744
B. 2,824
C. 2,844
D. 2,884

15. MULTIPLY:

$$\begin{array}{r} 284 \\ \underline{\times\ 56} \end{array}$$

A. 3,124
B. 15,884
C. 16,004
D. 15,904

16. DIVIDE:

$$5\overline{)145}$$

A. 209
B. 29
C. 19
D. 109

17. DIVIDE:

$$9\overline{)819}$$

A. 21
B. 91
C. 90
D. 901

18. DIVIDE:

$$3\overline{)621}$$

A. 207
B. 27
C. 270
D. 227

19. DIVIDE:

$$7\overline{)3927}$$

A. 445
B. 504
C. 5,061
D. 561

20. DIVIDE:

$$49\overline{)2940}$$

A. 60
B. 6
C. 61
D. 59

Add Whole Numbers (2.1.1)
Part I

A1

1. $\begin{array}{r}4\\+2\\\hline\end{array}$

A 2 C. 6

B 9 D. 8

A1

2. $\begin{array}{r}2\\+3\\\hline\end{array}$

A 5 C 3

B 6 D 1

A1

3. $\begin{array}{r}6\\+3\\\hline\end{array}$

A. 10 C. 7

B 3 D. 9

A1

4. $\begin{array}{r}7\\+6\\\hline\end{array}$

A. 10 C. 15

B. 11 D. 13

A1

5. $\begin{array}{r}9\\+9\\\hline\end{array}$

A 14 C 19

B 18 D 16

A1

6. $\begin{array}{r}6\\+8\\\hline\end{array}$

A. 12 C. 14

B. 10 D. 16

Add Whole Numbers (2.1.1)

Part II

A2

1.

$$\begin{array}{r} 32 \\ +\ 42 \\ \hline \end{array}$$

A. 67   C. 74

B. 85   D. 58

A2

2.

$$\begin{array}{r} 48 \\ +\ 20 \\ \hline \end{array}$$

A. 68   C. 64

B. 28   D. 86

A2

3.

$$\begin{array}{r} 54 \\ +\ 13 \\ \hline \end{array}$$

A. 76   C. 167

B. 41   D. 67

A3

4.

$$\begin{array}{r} 521 \\ +\ 435 \\ \hline \end{array}$$

A. 956   C. 569

B. 659   D. 695

A3

5.

$$\begin{array}{r} 4{,}215 \\ +\ 3{,}623 \\ \hline \end{array}$$

A. 7,838   C. 8,387

B. 3,887   D. 8,783

A3

6.

$$\begin{array}{r} 2{,}148 \\ +\ 7{,}741 \\ \hline \end{array}$$

A. 9,898   C. 8,998

B. 8,989   D. 9,889

Add Whole Numbers (2.1.1)
Part III

A4

1.
$$\begin{array}{r}1\\4\\+\,3\\\hline\end{array}$$

A. 5   C. 7

B. 8   D. 9

A4

2.
$$\begin{array}{r}4\\3\\+\,7\\\hline\end{array}$$

A. 12   C. 11

B. 14   D. 13

A4

3.
$$\begin{array}{r}4\\5\\+\,9\\\hline\end{array}$$

A. 18   C. 17

B. 16   D 15

A5

4
$$\begin{array}{r}37\\21\\+\,40\\\hline\end{array}$$

A. 89   C. 98

B. 88   D. 78

A5

5
$$\begin{array}{r}46\\12\\+\,31\\\hline\end{array}$$

A. 89   C. 98

B. 78   D. 79

A5

6.
$$\begin{array}{r}52\\24\\+\,11\\\hline\end{array}$$

A. 78   C. 87

B. 77   D. 88

Add Whole Numbers (2.1.1)
Part IV

A6

1. $\begin{array}{r} 48 \\ +\ 22 \\ \hline \end{array}$

A. 810 C. 70

B. 60 D. 601

A6

2. $\begin{array}{r} 79 \\ +\ 17 \\ \hline \end{array}$

A. 96 C. 69

B. 861 D. 816

A7

3. $\begin{array}{r} 405 \\ +\ 287 \\ \hline \end{array}$

A. 6,812 C. 692

B. 296 D. 6,821

A7

4. $\begin{array}{r} 2{,}638 \\ +\ 1{,}253 \\ \hline \end{array}$

A. 3,891 C. 38,811

B. 3,881 D. 3,880

A6

5. $\begin{array}{r} 26 \\ +\ 34 \\ \hline \end{array}$

A. 50 C. 61

B. 60 D. 16

A7

6. $\begin{array}{r} 225 \\ +\ 625 \\ \hline \end{array}$

A. 185 C. 851

B. 850 D. 580

Add Whole Numbers (2.1.1)
Part V

A6, A9

1\.
$$\begin{array}{r} 134 \\ +\ 472 \\ \hline \end{array}$$

A. 606 C. 60

B. 66 D. 706

A9

2\.
$$\begin{array}{r} 695 \\ +\ 295 \\ \hline \end{array}$$

A. 199 C. 99

B. 909 D. 990

A10

3\.
$$\begin{array}{r} 4{,}863 \\ +\ 2{,}509 \\ \hline \end{array}$$

A. 7,327 C. 3,727

B. 7,372 D. 6,372

A10

4\.
$$\begin{array}{r} 2{,}432 \\ +\ 6{,}789 \\ \hline \end{array}$$

A. 2,291 C. 9,201

B. 9,221 D. 9,220

A8, A9

5\.
$$\begin{array}{r} 240 \\ +\ 862 \\ \hline \end{array}$$

A. 10,102 C. 2,011

B. 10,210 D. 1,102

A10

6\.
$$\begin{array}{r} 4{,}327 \\ +\ 1{,}683 \\ \hline \end{array}$$

A. 6,010 C. 6,911

B. 1,169 D. 591,010

Add Whole Numbers (2.1.1)
Part VI

A11

1.
$$\begin{array}{r}34\\70\\+\ 28\\\hline\end{array}$$

A. 1,212   C. 213

B. 132   D. 122

A11

2.
$$\begin{array}{r}43\\47\\+\ 34\\\hline\end{array}$$

A. 124   C. 114

B. 115   D. 1,114

A11

3.
$$\begin{array}{r}63\\29\\+\ 46\\\hline\end{array}$$

A. 138   C. 83

B. 1,083   D. 183

A12

4.
$$\begin{array}{r}994\\95\\+\ 602\\\hline\end{array}$$

A. 151,811   C. 1,691

B. 1,681   D. 1,591

A12

5.
$$\begin{array}{r}2{,}342\\7{,}053\\+\ 4{,}206\\\hline\end{array}$$

A. 13,591   C. 13,501

B. 13,601   D. 135,911

A12

6
$$\begin{array}{r}4{,}361\\2{,}032\\+\ 8{,}708\\\hline\end{array}$$

A. 15,101   C. 14,091

B 1,410,911   D 15,001

SKILL SHEET

2.1.1 ADD WHOLE NUMBERS

____

____

SKILL SHEET

2.1.1 ADD WHOLE NUMBERS

A1 RECALL ADDITION NUMBER FACTS

Add

1. 2 + 5 = ______
2. 3 + 1 = ______
3. 8 + 0 = ______
4. 3 + 4 = ______
5. 0 + 7 = ______
6. 8 + 2 = ______
7. 6 + 3 = ______
8. 5 + 5 = ______
9. 2 + 7 = ______
10. 3 + 5 = ______

11. $\begin{array}{r} 6 \\ +\ 7 \\ \hline \end{array}$ ☐

12. $\begin{array}{r} 9 \\ +\ 4 \\ \hline \end{array}$ ☐

13. $\begin{array}{r} 8 \\ +\ 8 \\ \hline \end{array}$ ☐

14. $\begin{array}{r} 9 \\ +\ 7 \\ \hline \end{array}$ ☐

15. $\begin{array}{r} 5 \\ +\ 8 \\ \hline \end{array}$ ☐

SKILL SHEET

2.1.1 ADD WHOLE NUMBERS

A2 ADD TWO NUMBERS WITH UP TO 2 DIGITS EACH, NO REGROUPING

Add

1. $\begin{array}{r} 11 \\ +\ 14 \\ \hline \end{array}$

2. $\begin{array}{r} 32 \\ +\ 61 \\ \hline \end{array}$

3. $\begin{array}{r} 17 \\ +\ 12 \\ \hline \end{array}$

4. $\begin{array}{r} 48 \\ +\ 20 \\ \hline \end{array}$

5. $\begin{array}{r} 61 \\ +\ 13 \\ \hline \end{array}$

SKILL SHEET

2.1.1 ADD WHOLE NUMBERS

A3 ADD TWO NUMBERS WITH UP TO 3 OR 4 DIGITS EACH, NO REGROUPING

Add

1. 532
+ 261

2. 328
+ 271

3. 4,215
+ 3,623

4. 7,741
+ 2,148

5. 653
+ 242

SKILL SHEET

2.1.1 ADD WHOLE NUMBERS

A4 ADD THREE 1-DIGIT NUMBERS

Add

1. $\begin{array}{r} 6 \\ 2 \\ +\ 1 \\ \hline \end{array}$

2. $\begin{array}{r} 3 \\ 5 \\ +\ 4 \\ \hline \end{array}$

3. $\begin{array}{r} 6 \\ 7 \\ +\ 9 \\ \hline \end{array}$

4. $\begin{array}{r} 8 \\ 2 \\ +\ 5 \\ \hline \end{array}$

5. $\begin{array}{r} 1 \\ 3 \\ +\ 7 \\ \hline \end{array}$

SKILL SHEET

2.1.1 ADD WHOLE NUMBERS

A5 ADD THREE NUMBERS WITH UP TO 2 DIGITS EACH, NO REGROUPING

Add

1.
$$\begin{array}{r} 37 \\ 40 \\ +\ 21 \\ \hline \end{array}$$

2.
$$\begin{array}{r} 51 \\ 24 \\ +\ 11 \\ \hline \end{array}$$

3.
$$\begin{array}{r} 62 \\ 13 \\ +\ 25 \\ \hline \end{array}$$

4.
$$\begin{array}{r} 32 \\ 25 \\ +\ 12 \\ \hline \end{array}$$

5.
$$\begin{array}{r} 14 \\ 23 \\ +\ 52 \\ \hline \end{array}$$

SKILL SHEET

2.1.1 ADD WHOLE NUMBERS

A6 ADD TWO NUMBERS WITH UP TO 2 DIGITS EACH, REGROUPING ONES TO TENS

Add

1. $\begin{array}{r} 68 \\ +\ 12 \\ \hline \end{array}$

2. $\begin{array}{r} 35 \\ +\ 15 \\ \hline \end{array}$

3. $\begin{array}{r} 79 \\ +\ 17 \\ \hline \end{array}$

4. $\begin{array}{r} 18 \\ +\ 26 \\ \hline \end{array}$

5. $\begin{array}{r} 53 \\ +\ 37 \\ \hline \end{array}$

SKILL SHEET

2.1.1 ADD WHOLE NUMBERS

A7 ADD TWO NUMBERS WITH UP TO 3 OR 4 DIGITS EACH, REGROUPING ONES TO TENS

Add

1. $$\begin{array}{r} 240 \\ +\ 862 \\ \hline \end{array}$$

2. $$\begin{array}{r} 405 \\ +\ 287 \\ \hline \end{array}$$

3. $$\begin{array}{r} 6{,}532 \\ +\ 3{,}259 \\ \hline \end{array}$$

4. $$\begin{array}{r} 2{,}638 \\ +\ 1{,}253 \\ \hline \end{array}$$

5. $$\begin{array}{r} 3{,}056 \\ +\ 4{,}444 \\ \hline \end{array}$$

SKILL SHEET

2.1.1 ADD WHOLE NUMBERS

A8 ADD TWO NUMBERS WITH UP TO 3 DIGITS EACH, REGROUPING TENS TO HUNDREDS

Add

1. 140
+ 262

2. 231
+ 375

3. 680
+ 129

4. 726
+ 193

5. 533
+ 380

SKILL SHEET

2.1.1 ADD WHOLE NUMBERS

A9 ADD TWO NUMBERS WITH UP TO 3 DIGITS EACH, 1 TO 2 REGROUPINGS

Add

1. $\begin{array}{r} 365 \\ +\ 135 \\ \hline \end{array}$

2. $\begin{array}{r} 428 \\ +\ 262 \\ \hline \end{array}$

3. $\begin{array}{r} 628 \\ +\ 272 \\ \hline \end{array}$

4. $\begin{array}{r} 123 \\ +\ 387 \\ \hline \end{array}$

5. $\begin{array}{r} 731 \\ +\ 909 \\ \hline \end{array}$

147

SKILL SHEET

2.1.1 ADD WHOLE NUMBERS

A10 ADD TWO NUMBERS WITH UP TO 4 DIGITS EACH, 1 TO 3 REGROUPINGS

Add

1. 6,856 + 2,274

2. 3,246 + 1,374

3. 8,123 + 2,387

4. 9,923 + 1,178

5. 6,498 + 3,412

____

____

SKILL SHEET

2.1.1 ADD WHOLE NUMBERS

A11 ADD THREE NUMBERS WITH UP TO 2 DIGITS EACH, REGROUPING

Add

1.
$$\begin{array}{r} 34 \\ 95 \\ +\ 21 \\ \hline \end{array}$$

2.
$$\begin{array}{r} 61 \\ 38 \\ +\ 42 \\ \hline \end{array}$$

3.
$$\begin{array}{r} 43 \\ 47 \\ +\ 26 \\ \hline \end{array}$$

4.
$$\begin{array}{r} 62 \\ 73 \\ +\ 18 \\ \hline \end{array}$$

5.
$$\begin{array}{r} 45 \\ 64 \\ +\ 73 \\ \hline \end{array}$$

SKILL SHEET

2.1.1 ADD WHOLE NUMBERS

A12 ADD THREE NUMBERS WITH UP TO 3 OR 4 DIGITS EACH, REGROUPING

Add

1. 453
307
+ 233

2. 4,361
2,032
+ 8,608

3. 2,165
+ 1,954

4. 3,628
+ 2,673

5. 6,210
+ 8,399

Subtract Whole Numbers (2.1.2)
Part I

S1

1. $\begin{array}{r} 4 \\ -2 \\ \hline \end{array}$

A. 2 C. 3

B. 0 D. 1

S1

2. $\begin{array}{r} 6 \\ -3 \\ \hline \end{array}$

A. 4 C. 0

B. 5 D. 3

S1

3. $\begin{array}{r} 3 \\ -1 \\ \hline \end{array}$

A. 4 C. 3

B. 2 D. 5

S1

4. $\begin{array}{r} 12 \\ -4 \\ \hline \end{array}$

A. 10 C. 8

B. 6 D. 4

S1

5. $\begin{array}{r} 15 \\ -8 \\ \hline \end{array}$

A. 5 C. 10

B. 9 D. 7

S1

6. $\begin{array}{r} 17 \\ -9 \\ \hline \end{array}$

A. 13 C. 8

B. 5 D. 7

Subtract Whole Numbers (2.1.2)
Part II

S2

1. $\begin{array}{r} 74 \\ -\ 42 \\ \hline \end{array}$

A. 23 C. 32

B. 36 D. 63

S2

2 $\begin{array}{r} 98 \\ -\ 53 \\ \hline \end{array}$

A. 45 C. 514

B. 145 D. 54

S2

3. $\begin{array}{r} 59 \\ -\ 28 \\ \hline \end{array}$

A 13 C. 17

B. 71 D 31

S3

4. $\begin{array}{r} 895 \\ -\ 343 \\ \hline \end{array}$

A. 525 C. 255

B. 552 D. 250

S3

5. $\begin{array}{r} 649 \\ -\ 436 \\ \hline \end{array}$

A. 213 C. 312

B 273 D. 372

S3

6 $\begin{array}{r} 929 \\ -\ 624 \\ \hline \end{array}$

A 345 C. 503

B 543 D 305

Subtract Whole Numbers (2.1.2)
Part III

S4

1.
$$\begin{array}{r} 90 \\ -35 \\ \hline \end{array}$$

A. 65 C. 55

B. 56 D. 45

S4

2.
$$\begin{array}{r} 56 \\ -\ 38 \\ \hline \end{array}$$

A. 18 C 81

B. 22 D. 82

S4

3.
$$\begin{array}{r} 40 \\ -\ 28 \\ \hline \end{array}$$

A. 21 C. 68

B. 32 D. 12

S5

4.
$$\begin{array}{r} 472 \\ -363 \\ \hline \end{array}$$

A 111 C. 109

B. 472 D. 274

S5

5.
$$\begin{array}{r} 213 \\ -\ 105 \\ \hline \end{array}$$

A. 108 C 18

B. 180 D. 118

S5

6.
$$\begin{array}{r} 480 \\ -\ 36 \\ \hline \end{array}$$

A 456 C. 454

B. 654 D. 444

Subtract Whole Numbers (2.1.2)
Part IV

S6, S8

1. 605 − 515

A. 19
C. 190
B. 109
D. 90

S6, S8

2. 865 − 574

A 201
C. 291
B. 921
D. 192

S7, S8

3 333 − 15

A. 118
C. 208
B. 188
D. 318

S7, S8

4. 210 − 139

A. 71
C. 171
B. 17
D. 710

S7, S8

5. 557 − 197

A. 440
C. 630
B 404
D. 360

S6, S8

6. 701 − 520

A 221
C. 181
B 122
D 281

Subtract Whole Numbers (2.1.2)
Part V

S9

1.
$$\begin{array}{r} 7,652 \\ -\ 704 \\ \hline \end{array}$$

A. 6,802 C. 7,152

B. 6,948 D. 7,958

S9

2.
$$\begin{array}{r} 4,872 \\ -\ 3,915 \\ \hline \end{array}$$

A 967 C. 1,967

B. 1,163 D. 957

S9

3.
$$\begin{array}{r} 7,586 \\ -\ 1,698 \\ \hline \end{array}$$

A. 5,888 C. 1,112

B. 6,112 D. 6,118

S10

4.
$$\begin{array}{r} 54,474 \\ -\ 368 \\ \hline \end{array}$$

A. 54,414 C 53,115

B. 54,106 D. 51,116

S10

5.
$$\begin{array}{r} 37,501 \\ -\ 16,846 \\ \hline \end{array}$$

A 21,345 C 21,335

B 21,365 D 20,655

S10

6.
$$\begin{array}{r} 50,237 \\ -\ 35,849 \\ \hline \end{array}$$

A 25,498 C. 14,388

B. 25,612 D 25,618

SKILL SHEET

2.1.2 SUBTRACT WHOLE NUMBERS

____

____

SKILL SHEET

2.1.2 SUBTRACT WHOLE NUMBERS

S1 RECALL SUBTRACTION NUMBER FACTS

Subtract

1. 5 - 2 = ______
2. 6 - 4 = ______
3. 9 - 8 = ______
4. 7 - 1 = ______
5. 3 - 3 = ______
6. 8 - 4 = ______
7. 5 - 0 = ______
8. 6 - 2 = ______
9. 9 - 4 = ______
10. 7 - 5 = ______

11. $\begin{array}{r} 14 \\ -7 \\ \hline \boxed{} \end{array}$

12. $\begin{array}{r} 10 \\ -8 \\ \hline \boxed{} \end{array}$

13. $\begin{array}{r} 18 \\ -9 \\ \hline \boxed{} \end{array}$

14. $\begin{array}{r} 12 \\ -7 \\ \hline \boxed{} \end{array}$

15. $\begin{array}{r} 11 \\ -2 \\ \hline \boxed{} \end{array}$

____

____

SKILL SHEET

2.1.2 SUBTRACT WHOLE NUMBERS

S2 SUBTRACT TWO NUMBERS WITH UP TO 2 DIGITS EACH, NO REGROUPING

Subtract

1. $\begin{array}{r} 88 \\ -\ 66 \\ \hline \end{array}$

2. $\begin{array}{r} 35 \\ -\ 22 \\ \hline \end{array}$

3. $\begin{array}{r} 91 \\ -\ 10 \\ \hline \end{array}$

4. $\begin{array}{r} 75 \\ -\ 62 \\ \hline \end{array}$

5. $\begin{array}{r} 43 \\ -\ 32 \\ \hline \end{array}$

SKILL SHEET

2.1.2 SUBTRACT WHOLE NUMBERS

S3 SUBTRACT TWO NUMBERS WITH UP TO 3 DIGITS EACH, NO REGROUPING

Subtract

1. $\begin{array}{r}321\\-\ 210\\\hline\end{array}$

2. $\begin{array}{r}578\\-\ 436\\\hline\end{array}$

3. $\begin{array}{r}892\\-\ 781\\\hline\end{array}$

4. $\begin{array}{r}655\\-\ 534\\\hline\end{array}$

5. $\begin{array}{r}829\\-\ 717\\\hline\end{array}$

SKILL SHEET

2.1.2 SUBTRACT WHOLE NUMBERS

S4 SUBTRACT TWO NUMBERS WITH UP TO 2 DIGITS EACH, REGROUPING TENS TO ONES

Subtract

---

1. $\begin{array}{r}60\\ -\,35\\ \hline\end{array}$

2. $\begin{array}{r}32\\ -\,28\\ \hline\end{array}$

3. $\begin{array}{r}47\\ -\,38\\ \hline\end{array}$

4. $\begin{array}{r}62\\ -\,18\\ \hline\end{array}$

5. $\begin{array}{r}30\\ -\,15\\ \hline\end{array}$

SKILL SHEET

2.1.2 SUBTRACT WHOLE NUMBERS

S5 SUBTRACT TWO NUMBERS WITH UP TO 3 DIGITS EACH, REGROUPING TENS TO ONES

Subtract

---

1. $\begin{array}{r} 472 \\ -\ 363 \\ \hline \end{array}$

---

2. $\begin{array}{r} 993 \\ -\ 485 \\ \hline \end{array}$

---

3. $\begin{array}{r} 625 \\ -\ 306 \\ \hline \end{array}$

---

4. $\begin{array}{r} 832 \\ -\ 716 \\ \hline \end{array}$

---

5. $\begin{array}{r} 278 \\ -\ 159 \\ \hline \end{array}$

SKILL SHEET

2.1.2 SUBTRACT WHOLE NUMBERS

S6 SUBTRACT TWO NUMBERS WITH UP TO 3 DIGITS EACH, REGROUPING HUNDREDS TO TENS

Subtract

1. $\begin{array}{r} 508 \\ -\underline{317} \end{array}$

2. $\begin{array}{r} 728 \\ -\underline{594} \end{array}$

3. $\begin{array}{r} 874 \\ -\underline{183} \end{array}$

4. $\begin{array}{r} 929 \\ -\underline{338} \end{array}$

5. $\begin{array}{r} 627 \\ -\underline{446} \end{array}$

SKILL SHEET

2.1.2 SUBTRACT WHOLE NUMBERS

S7 SUBTRACT TWO NUMBERS WITH UP TO 3 DIGITS EACH, REGROUPING TO TENS OR ONES

Subtract

1. 728 − 609

2. 216 − 135

3. 565 − 474

4. 536 − 453

5. 288 − 199

SKILL SHEET

2.1.2 SUBTRACT WHOLE NUMBERS

S8 SUBTRACT TWO NUMBERS WITH UP TO 3 DIGITS EACH, ONE OR TWO REGROUPINGS

Subtract

1. 586 − 99

2. 632 − 276

3. 325 − 166

4. 729 − 375

5. 507 − 308

SKILL SHEET

2.1.2 SUBTRACT WHOLE NUMBERS

S9 SUBTRACT TWO NUMBERS WITH UP TO 4 DIGITS EACH, ONE TO THREE REGROUPINGS

Subtract

1. $\begin{array}{r} 7{,}586 \\ -\ 1{,}698 \\ \hline \end{array}$

2. $\begin{array}{r} 3{,}261 \\ -\ 1{,}032 \\ \hline \end{array}$

3. $\begin{array}{r} 5{,}791 \\ -\ 3{,}882 \\ \hline \end{array}$

4. $\begin{array}{r} 6{,}230 \\ -\ 5{,}421 \\ \hline \end{array}$

5. $\begin{array}{r} 9{,}876 \\ -\ 6{,}597 \\ \hline \end{array}$

SKILL SHEET

2.1.2 SUBTRACT WHOLE NUMBERS

S10 SUBTRACT TWO NUMBERS WITH UP TO 5 DIGITS EACH, ONE TO FOUR REGROUPINGS

Subtract

1. $\begin{array}{r} 50{,}237 \\ -\ 35{,}849 \\ \hline \end{array}$

2. $\begin{array}{r} 62{,}315 \\ -\ 21{,}456 \\ \hline \end{array}$

3. $\begin{array}{r} 41{,}265 \\ -\ 30{,}376 \\ \hline \end{array}$

4. $\begin{array}{r} 76{,}321 \\ -\ 57{,}830 \\ \hline \end{array}$

5. $\begin{array}{r} 95{,}232 \\ -\ 68{,}154 \\ \hline \end{array}$

Multiply Whole Numbers (2.1.3)
Part I

M1

1.
$$\begin{array}{r} 4 \\ \times 3 \\ \hline \end{array}$$

A. 14 C. 16
B. 24 D. 12

M1

2.
$$\begin{array}{r} 5 \\ \times 4 \\ \hline \end{array}$$

A. 20 C. 15
B. 25 D. 9

M1

3.
$$\begin{array}{r} 4 \\ \times 4 \\ \hline \end{array}$$

A. 16 C. 10
B. 12 D. 18

M1

4.
$$\begin{array}{r} 6 \\ \times 6 \\ \hline \end{array}$$

A. 44 C. 18
B. 36 D. 24

M1

5.
$$\begin{array}{r} 2 \\ \times 3 \\ \hline \end{array}$$

A. 5 C. 8
B. 4 D. 6

M1

6.
$$\begin{array}{r} 3 \\ \times 9 \\ \hline \end{array}$$

A. 30 C. 18
B. 27 D. 25

Multiply Whole Numbers (2.1.3)
Part II

M2

1 $\begin{array}{r} 41 \\ \underline{\times\ 6} \end{array}$

A 426 C 246

B 106 D 624

M2

2 $\begin{array}{r} 83 \\ \underline{\times\ 3} \end{array}$

A 249 C. 429

B. 924 D. 119

M2

3 $\begin{array}{r} 52 \\ \underline{\times\ 4} \end{array}$

A. 208 C. 28

B. 280 D. 200

M3

4. $\begin{array}{r} 324 \\ \underline{\times\ 2} \end{array}$

A 648 C 456

B 646 D 846

M3

5. $\begin{array}{r} 3{,}213 \\ \underline{\times\ \ 3} \end{array}$

A 9,369 C. 6,356

B. 9,639 D. 6,536

M3

6. $\begin{array}{r} 5{,}034 \\ \underline{\times\ 2} \end{array}$

A 7,256 C. 10,068

B. 86,010 D. 6,527

Multiply Whole Numbers (2.1.3)
Part III

M4

1. 83
X 9

A. 2,772 C. 7,227

B 747 D. 182

M4

2. 64
X 6

A. 3,624 C. 2,436

B 384 D 119

M4

3 42
X 8

A. 336 C 306

B. 633 D 636

M5

4 856
X 5

A. 4,280 C. 4,050

B. 402,530 D. 1,411

M5

5. 4,609
X 3

A 271,812 C 13,827

B 121,827 D 79,312

M5

6. 9,643
X 8

A 18,531 C 72,824

B. 77,144 D. 72,482,41

Multiply Whole Numbers (2.1.3)
Part IV

M6

1.

$$\begin{array}{r}92\\ \times\,72\\ \hline\end{array}$$

A. 6,498
B. 828
C. 6,624
D. 283

M6

2.

$$\begin{array}{r}71\\ \times\,68\\ \hline\end{array}$$

A. 4,828
B. 1,210
C. 994
D. 295

M6

3.

$$\begin{array}{r}34\\ \times\,85\\ \hline\end{array}$$

A. 442
B. 4,447
C. 341
D. 2,890

M7

4.

$$\begin{array}{r}852\\ \times\,25\\ \hline\end{array}$$

A. 263,580
B. 21,300
C. 5,964
D. 2,481

M7

5.

$$\begin{array}{r}187\\ \times\,73\\ \hline\end{array}$$

A. 70,800
B. 1,870
C. 1,284
D. 13,651

M7

6.

$$\begin{array}{r}6{,}254\\ \times\,34\\ \hline\end{array}$$

A. 4,343,528
B. 212,636
C. 43,778
D. 20,485

SKILL SHEET

2.1.3 MULTIPLY WHOLE NUMBERS

____

____

SKILL SHEET

2.1.3 MULTIPLY WHOLE NUMBERS

M1 RECALL MULTIPLICATION NUMBER FACTS

Multiply

1. 4 X 2 = ______
2. 5 X 4 = ______
3. 1 X 8 = ______
4. 7 X 3 = ______
5. 5 X 5 = ______
6. 8 X 4 = ______
7. 2 X 0 = ______
8. 6 X 5 = ______
9. 2 X 9 = ______
10. 3 X 3 = ______

11. $\begin{array}{r} 8 \\ \times 8 \\ \hline \boxed{} \end{array}$

12. $\begin{array}{r} 6 \\ \times 7 \\ \hline \boxed{} \end{array}$

13. $\begin{array}{r} 5 \\ \times 9 \\ \hline \boxed{} \end{array}$

14. $\begin{array}{r} 10 \\ \times 4 \\ \hline \boxed{} \end{array}$

15. $\begin{array}{r} 11 \\ \times 2 \\ \hline \boxed{} \end{array}$

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SKILL SHEET

2.1.3 MULTIPLY WHOLE NUMBERS

M2 MULTIPLY 1-DIGIT BOTTOM NUMBER TIMES 2-DIGIT TOP NUMBER, NO REGROUPING

Multiply

1. 24
X 2

2. 42
X 3

3. 81
X 6

4. 71
X 9

5. 54
X 2

6. 73
X 3

SKILL SHEET

2.1.3 MULTIPLY WHOLE NUMBERS

M3 MULTIPLY 1-DIGIT BOTTOM NUMBER TIMES UP TO 4 DIGIT TOP NUMBER, NO REGROUPING

Multiply

1. 5,034
   X 2

2. 3,213
   X 3

3. 324
   X 2

4. 1,323
   X 1

5. 231
   X 3

6. 8,213
   X 3

SKILL SHEET

2.1.3 MULTIPLY WHOLE NUMBERS

M4 MULTIPLY 1-DIGIT BOTTOM NUMBER TIMES 2-DIGIT TOP NUMBER, REGROUPING

Multiply

1. $\begin{array}{r} 36 \\ \times\ 5 \\ \hline \end{array}$

2. $\begin{array}{r} 59 \\ \times\ 3 \\ \hline \end{array}$

3. $\begin{array}{r} 82 \\ \times\ 7 \\ \hline \end{array}$

4. $\begin{array}{r} 28 \\ \times\ 6 \\ \hline \end{array}$

5. $\begin{array}{r} 54 \\ \times\ 8 \\ \hline \end{array}$

6. $\begin{array}{r} 98 \\ \times\ 5 \\ \hline \end{array}$

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SKILL SHEET

2.1.3 MULTIPLY WHOLE NUMBERS

M5 MULTIPLY 1-DIGIT BOTTOM NUMBER TIMES UP TO 3 OR 4 DIGIT TOP NUMBER, REGROUPING

Multiply

1. $\begin{array}{r} 382 \\ \times\ 4 \\ \hline \end{array}$

2. $\begin{array}{r} 9{,}643 \\ \times\ \ 8 \\ \hline \end{array}$

3. $\begin{array}{r} 4{,}906 \\ \times\ \ 6 \\ \hline \end{array}$

4. $\begin{array}{r} 865 \\ \times\ 6 \\ \hline \end{array}$

5. $\begin{array}{r} 832 \\ \times\ 7 \\ \hline \end{array}$

6. $\begin{array}{r} 6{,}782 \\ \times\ \ 5 \\ \hline \end{array}$

SKILL SHEET

2.1.3 MULTIPLY WHOLE NUMBERS

M6 MULTIPLY 2-DIGIT BOTTOM NUMBER TIMES 2-DIGIT TOP NUMBER, REGROUPING

Multiply

1. $\begin{array}{r} 32 \\ \times\ 23 \\ \hline \end{array}$

2. $\begin{array}{r} 72 \\ \times\ 96 \\ \hline \end{array}$

3. $\begin{array}{r} 45 \\ \times\ 36 \\ \hline \end{array}$

4. $\begin{array}{r} 28 \\ \times\ 15 \\ \hline \end{array}$

5. $\begin{array}{r} 61 \\ \times\ 89 \\ \hline \end{array}$

6. $\begin{array}{r} 19 \\ \times\ 27 \\ \hline \end{array}$

SKILL SHEET

2.1.3 MULTIPLY WHOLE NUMBERS

M7 MULTIPLY 2-DIGIT BOTTOM NUMBER TIMES UP TO 4-DIGIT TOP NUMBER, REGROUPING

Multiply

1. 254 X 36

2. 258 X 52

3. 329 X 25

4. 876 X 21

5. 8,254 X 62

6. 7,599 X 48

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Divide Whole Numbers (2.1.4)
Part I

D1

1 $2\overline{)\,6}$

A 4

B 12

C 3

D 2

D1

2 $3\overline{)\,12}$

A 6

B 2

C 12

D 4

D1

3. $7\overline{)\,21}$

A 6

B 3

C 2

D 5

D1

4 $6\overline{)\,36}$

A 4

B 6

C 7

D 8

D1

5 $4\overline{)\,32}$

A 10

B 4

C 8

D 6

D1

6. $9\overline{)\,45}$

A 5

B 10

C 6

D 4

Divide Whole Numbers (2.1.4)
Part II

D2

1 $9\overline{)72}$

A 9 C 2
B 8 D 3

D2

2 $8\overline{)48}$

A 8 C 6
B 7 D 9

D2

3 $2\overline{)86}$

A 13 C 34
B 14 D 43

D4

4 $7\overline{)147}$

A 71 C 27
B 21 D 12

D4

5 $3\overline{)618}$

A 216 C 26
B 20 D 206

D5

6 $8\overline{)992}$

A 24 C 240
B 124 D 214

D5

7 $9\overline{)747}$

A 83 C 69
B 89 D 70

D4

8 $6\overline{)426}$

A 82 C 78
B 71 D 81

Divide Whole Numbers (2.1.4)
Part II, cont.

D8

9 $54\overline{)324}$

A 5 C 101
B 6 D 111

D6

10. $7\overline{)2,842}$

A. 284 C. 406
B. 481 D. 208

D6

11. $5\overline{)4,505}$

A. 90 C. 901
B. 109 D. 190

D6

12 $8\overline{)6,416}$

A 802 C 218
B 820 D 280

D8

13. $31\overline{)341}$

A 11 C. 101
B 110 D. 12

D8

14 $49\overline{)735}$

A 51 C 13
B 5 D 15

181

Divide Whole Numbers (2.1.4)
Part III

D3

1. 6)32

A 5 C 5 r2
B 6 D 6 r2

D3

2. 3)42

A 11 r1 C 11
B. 10 r1 D 14

D5

3. 9)735

A 81 r6 C 7 r8
B 8 r5 D 42 r6

D5

4. 6)822

A 137 C 144 r2
E 173 r4 D 104 r2

D7

5. 7)8,537

A 1,219 r4 C 8,107 r4
B 1,142 r2 D 1,218 r1

D7

6. 4)2,196

A 251 r1 C 552 r1
B 549 D 564

Divide Whole Numbers (2.1.4)
Part IV

D10

1 $18\overline{)396}$

A 22 r2 C 20
B 22 D 20 r2

D10

2. $32\overline{)659}$

A 19 r20 C 20
B 19 D 20 r19

D10

3. $25\overline{)156}$

A 6 C 16
B 6 r6 D 60 r6

D9

4 $26\overline{)78}$

A 4 C 4 r3
B 3 r4 D 3

D9

5. $37\overline{)85}$

A 3 r2 C 2 r11
B 11 r2 D 11 r3

D9

6. $42\overline{)99}$

A 2 r15 C 2 r51
B 5 r2 D 5 r2

Divide Whole Numbers (2.1.4)
Part IV, cont.

D11

7 23)2,099

A. 19 r6 C. 91 r6
B. 91 D. 19

D11

8. 15)5,625

A. 375 r10 C. 570 r5
B. 408 D. 375

D12

9 75)18,854

A. 368 C. 251 r29
B. 412 r6 D. 490 r17

D12

10 43)80,718

A. 7,118 r33 C. 1,836
B. 1,877 r7 D. 2,377

D12

11 84)49,660

A. 519 r61 C. 195 r16
B. 591 r16 D. 951 r16

D11

12. 37)1,406

A. 38 C. 308
B. 8 r3 D. 83

SKILL SHEET

2.14 DIVIDE WHOLE NUMBERS

SKILL SHEET

2.14 DIVIDE WHOLE NUMBERS

D1 RECALL DIVISION NUMBER FACTS

Divide

1. 4 ÷ 2 = ______

2. 8 ÷ 1 = ______

3. 7 ÷ 0 = ______

4. 4 ÷ 1 = ______

5. 3 ÷ 3 = ______

6. 9 ÷ 3 = ______

7. 10 ÷ 2 = ______

8. 16 ÷ 8 = ______.

9. 12 ÷ 4 = ______

10. 20 ÷ 5 = ______

11. $4\overline{)32}$

12. $7\overline{)63}$

13. $6\overline{)36}$

14. $7\overline{)42}$

15. $3\overline{)27}$

SKILL SHEET

2.1.4 DIVIDE WHOLE NUMBERS

D2 1-DIGIT DIVISOR INTO 2-DIGIT DIVIDEND, ALL SIGHT DIVISION, NO REMAINDERS

Divide

1. $6\overline{)12}$

2. $3\overline{)99}$

3. $8\overline{)48}$

4. $5\overline{)50}$

5. $2\overline{)62}$

6. $4\overline{)84}$

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SKILL SHEET

2.1.4 DIVIDE WHOLE NUMBERS

D3 1-DIGIT DIVISOR INTO 2-DIGIT DIVIDEND, REMAINDERS POSSIBLE

Divide

1. $8\overline{)50}$
2. $3\overline{)27}$
3. $7\overline{)38}$
4. $6\overline{)56}$
5. $5\overline{)84}$
6. $9\overline{)59}$

SKILL SHEET

2.1.4 DIVIDE WHOLE NUMBERS

D4 1-DIGIT DIVISOR INTO 3-DIGIT DIVIDEND, MOSTLY SIGHT DIVISION, NO REMAINDERS

Divide

1. $5\overline{)630}$

2. $2\overline{)198}$

3. $6\overline{)306}$

4. $7\overline{)147}$

5. $8\overline{)992}$

6. $8\overline{)992}$

SKILL SHEET

2.1.4 DIVIDE WHOLE NUMBERS

D5 1-DIGIT DIVISOR INTO 3-DIGIT DIVIDEND, REMAINDERS POSSIBLE

Divide

1. 5) 439
2. 7) 821
3. 3) 120
4. 4) 529
5. 6) 657
6. 8) 592

SKILL SHEET

2.1.4 DIVIDE WHOLE NUMBERS

D6 1-DIGIT DIVISOR INTO 4-DIGIT DIVIDEND, MOSTLY SIGHT DIVISION, NO REMAINDERS POSSIBLE

Divide

1. 5)4,405
2. 7)4,914
3. 6)3,012
4. 8)6,560
5. 4)2,432
6. 9)9,198

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SKILL SHEET

2.1.4 DIVIDE WHOLE NUMBERS

D7 1-DIGIT DIVISOR INTO 4-DIGIT DIVIDEND, REMAINDERS POSSIBLE

Divide

1. $3\overline{)9,872}$

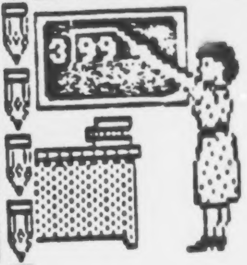
2. $5\overline{)4,826}$

3. $6\overline{)3,761}$

4. $2\overline{)9,763}$

5. $9\overline{)9,862}$

6. $7\overline{)4,187}$



SKILL SHEET

2.1.4 DIVIDE WHOLE NUMBERS

D8 2-DIGIT DIVISOR INTO 3-DIGIT DIVIDEND, NO REMAINDERS

Divide

1. $31\overline{)341}$
2. $14\overline{)224}$
3. $15\overline{)690}$
4. $20\overline{)640}$
5. $54\overline{)324}$
6. $26\overline{)312}$

SKILL SHEET

2.1.4 DIVIDE WHOLE NUMBERS

D9 2-DIGIT DIVISOR INTO 2-DIGIT DIVIDEND, REMAINDERS POSSIBLE

Divide

1. $45\overline{)\,98}$

2. $26\overline{)\,35}$

3. $61\overline{)\,89}$

4. $15\overline{)\,78}$

5. $37\overline{)\,93}$

6. $74\overline{)\,97}$

SKILL SHEET

2.1.4 DIVIDE WHOLE NUMBERS

D10 2-DIGIT DIVISOR INTO 3-DIGIT DIVIDEND, REMAINDERS POSSIBLE

Divide

1. $30\overline{)965}$

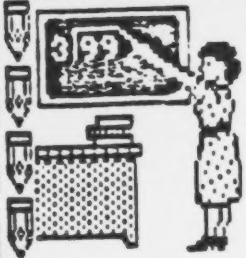
2. $42\overline{)750}$

3. $33\overline{)659}$

4. $18\overline{)983}$

5. $25\overline{)580}$

6. $51\overline{)759}$



SKILL SHEET

2.1.4 DIVIDE WHOLE NUMBERS

D11 2-DIGIT DIVISOR INTO 4-DIGIT DIVIDEND, REMAINDERS POSSIBLE

Divide

1. $23\overline{)2{,}099}$
2. $36\overline{)4{,}522}$
3. $55\overline{)5{,}320}$
4. $61\overline{)8{,}237}$
5. $37\overline{)1{,}406}$
6. $16\overline{)6{,}802}$

SKILL SHEET

2.1.4 DIVIDE WHOLE NUMBERS

D12 2-DIGIT DIVISOR INTO 5-DIGIT DIVIDEND, REMAINDERS POSSIBLE

Divide

1. 53) 30,286

2. 40) 60,382

3. 23) 91,612

4. 31) 75,686

5. 64) 53,272

6. 72) 29,348

MIXED NUMBERS/FRACTION OPERATIONS

PRE-TEST and POST-TEST

Name____________________ Date____________________

1. ADD and SIMPLIFY:

$$\begin{array}{r} 6\frac{3}{8} \\ +\ 5\frac{1}{2} \\ \hline \end{array}$$

A. $11\frac{7}{16}$ C. $11\frac{3}{5}$

B. $11\frac{2}{5}$ D. $11\frac{7}{8}$

2. ADD and SIMPLIFY:

$$\begin{array}{r} 2\frac{2}{3} \\ +\ 3\frac{1}{4} \\ \hline \end{array}$$

A. $6\frac{11}{12}$ C. $5\frac{11}{24}$

B. $5\frac{3}{7}$ D. $5\frac{11}{12}$

3. ADD and SIMPLIFY:

$$\begin{array}{r} 3\frac{1}{3} \\ +\ 2\frac{1}{2} \\ \hline \end{array}$$

A. $5\frac{5}{6}$ C. $6\frac{5}{12}$

B. $6\frac{5}{6}$ D. $5\frac{5}{12}$

4. ADD and SIMPLIFY:

$$\begin{array}{r} 7\frac{2}{5} \\ +\ 2\frac{1}{2} \\ \hline \end{array}$$

A. $9\frac{9}{10}$ C. $9\frac{3}{10}$

B. $9\frac{3}{7}$ D. $9\frac{3}{5}$

5. ADD and SIMPLIFY:

$$\begin{array}{r} 3\frac{5}{12} \\ +\ 2\frac{1}{4} \\ \hline \end{array}$$

A. $5\frac{3}{8}$ C. $5\frac{2}{3}$

B. $5\frac{1}{2}$ D. $6\frac{2}{3}$

6. SUBTRACT and SIMPLIFY:

$$\begin{array}{r} 5\frac{5}{9} \\ -\ 3\frac{1}{3} \\ \hline \end{array}$$

A. $8\frac{2}{3}$ C. $2\frac{2}{3}$

B. $2\frac{2}{9}$ D. $2\frac{4}{9}$

7. SUBTRACT and SIMPLIFY:

$$\begin{array}{r} 8\frac{3}{4} \\ -\ 6\frac{2}{8} \\ \hline \end{array}$$

A. $2\frac{1}{4}$ C. $2\frac{1}{6}$

B. $2\frac{1}{8}$ D. $2\frac{1}{2}$

8. SUBTRACT and SIMPLIFY:

$$\begin{array}{r} 8\frac{3}{4} \\ -\ 4\frac{1}{2} \\ \hline \end{array}$$

A. $4\frac{1}{2}$ C. $4\frac{3}{6}$

B. $4\frac{1}{4}$ D. $4\frac{4}{6}$

9. SUBTRACT and SIMPLIFY:

$$\begin{array}{r} 5\frac{7}{12} \\ -\ 3\frac{2}{6} \\ \hline \end{array}$$

A. $2\frac{1}{4}$ C. $2\frac{5}{12}$

B. $2\frac{5}{6}$ D. $2\frac{1}{3}$

10. SUBTRACT and SIMPLIFY:

$$\begin{array}{r} 7\frac{9}{10} \\ -\ 4\frac{3}{5} \\ \hline \end{array}$$

A. $3\frac{3}{5}$ C. $3\frac{3}{10}$

B. $3\frac{12}{15}$ D. $3\frac{6}{10}$

MIXED NUMBER/FRACTION OPERATIONS

PRE-TEST and POST-TEST
(Continuation)

11. MULTIPLY and SIMPLIFY:

$$2 \times \frac{9}{7}$$

A. $3\frac{6}{7}$ C. $1\frac{2}{7}$

B. $2\frac{4}{7}$ D. $\frac{6}{7}$

12. MULTIPLY and SIMPLIFY:

$$8 \times \frac{3}{5}$$

A. $\frac{3}{5}$ C. $8\frac{3}{5}$

B. $4\frac{4}{5}$ D. $2\frac{1}{5}$

13. MULTIPLY and SIMPLIFY:

$$7 \times \frac{3}{8}$$

A. $7\frac{3}{8}$
B. $1\frac{1}{4}$
C. $\frac{3}{8}$
D. $2\frac{5}{8}$

14. MULTIPLY and SIMPLIFY:

$$3 \times \frac{4}{5}$$

A. $3\frac{4}{5}$ C. $\frac{4}{5}$

B. $2\frac{2}{5}$ D. $1\frac{2}{5}$

15. MULTIPLY and SIMPLIFY:

$$9 \times \frac{4}{5}$$

A. $9\frac{4}{5}$ C. $\frac{4}{5}$

B. $7\frac{1}{5}$ D. $2\frac{3}{5}$

16. FIND THE MISSING TERM:

$$\frac{1}{4} = \frac{N}{16}$$

A. 4
B. 6
C. 12
D. 8

17. FIND THE MISSING TERM:

$$\frac{6}{18} = \frac{3}{N}$$

A. 6
B. 3
C. 18
D. 9

18. FIND THE MISSING TERM:

$$\frac{N}{24} = \frac{1}{4}$$

A. 12
B. 4
C. 6
D. 24

19. FIND THE MISSING TERM:

$$\frac{2}{N} = \frac{4}{8}$$

A. 4
B. 8
C. 2
D. 16

20. FIND THE MISSING TERM:

$$\frac{8}{N} = \frac{4}{16}$$

A. 8
B. 4
C. 16
D. 32

Mixed Number/Fraction Operations
Prerequisite Skills

V1

1. Circle the **denominators** that are the number **6**.

$\frac{6}{10}$ $6\frac{1}{2}$ $\frac{1}{6}$ $\frac{4}{5}$ $6\frac{5}{6}$ $\frac{6}{7}$

V1

2. Circle the **numerators** that are the number **3**.

$\frac{3}{4}$ $3\frac{1}{8}$ $\frac{1}{3}$ $\frac{3}{5}$ $3\frac{3}{8}$ $\frac{2}{3}$

C1

Circle the letter to tell whether the fraction is **proper, improper, or mixed.**

3. $1\frac{2}{3}$
   a. proper
   b. improper
   c. mixed

4. $\frac{5}{4}$
   a. proper
   b. improper
   c. mixed

5. $2\frac{1}{8}$
   a. proper
   b. improper
   c. mixed

6. $\frac{3}{4}$
   a. proper
   b. improper
   c. mixed

7. $\frac{6}{7}$
   a. proper
   b. improper
   c. mixed

8. $3\frac{2}{3}$
   a. proper
   b. improper
   c. mixed

Mixed Number/Fraction Operations
Prerequisite Skills, cont.

C2

9. Change the following **improper** fractions to **proper** fractions.

$\frac{6}{5} =$ ____ $\frac{10}{7} =$ ____ $\frac{11}{10} =$ ____ $\frac{7}{4} =$ ____

R1

10. Circle the **reduced** fractions.

$\frac{1}{2}$ $\frac{2}{14}$ $\frac{3}{6}$ $\frac{3}{10}$ $\frac{1}{3}$ $\frac{3}{9}$ $\frac{1}{4}$

R2

11. Reduce the following fractions to the **lowest terms.**

$\frac{2}{4} =$ ____ $\frac{5}{10} =$ ____ $\frac{6}{8} =$ ____ $\frac{6}{20} =$ ____ $\frac{6}{18} =$ ____

12. What are the **lowest common denominators** for the following?

A1

a. $\frac{1}{2}$ $\frac{2}{3}$ ____	b. $\frac{3}{5}$ $\frac{1}{3}$ ____	c. $\frac{1}{3}$ $\frac{3}{4}$ ____
d. $\frac{1}{4}$ $\frac{2}{5}$ ____	e. $\frac{1}{2}$ $\frac{5}{6}$ ____	f. $\frac{2}{3}$ $\frac{1}{15}$ ____

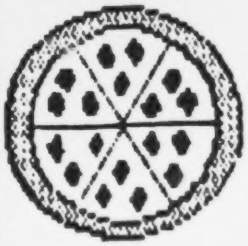
A2

13. Rename to the **given denominator**.

a. $\frac{1}{2} = \frac{\quad}{6}$	b. $\frac{3}{4} = \frac{\quad}{8}$	c. $\frac{2}{3} = \frac{\quad}{15}$
d. $\frac{3}{5} = \frac{\quad}{10}$	e. $\frac{5}{6} = \frac{\quad}{12}$	f. $\frac{6}{7} = \frac{\quad}{21}$

SKILL SHEET

SIMPLIFYING FRACTIONS



SKILL SHEET

SIMPLIFYING FRACTIONS

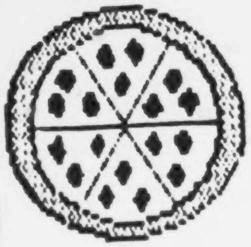
V1 RECOGNIZE NUMERATOR AND DENOMINATOR

Directions: Circle the numerators.

1. $\frac{2}{3}$
2. $\frac{1}{2}$
3. $\frac{3}{4}$

Directions: Circle the denominators.

1. $\frac{3}{6}$
2. $\frac{6}{10}$
3. $\frac{8}{9}$



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SKILL SHEET

SIMPLIFYING FRACTIONS

R1 RECOGNIZE REDUCED AND NOT REDUCED

Directions: Circle the reduced fractions.

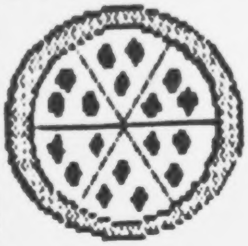
1. $\frac{6}{8}$

2. $\frac{3}{10}$

3. $\frac{1}{2}$

4. $\frac{4}{8}$

5. $\frac{3}{7}$



SKILL SHEET

SIMPLIFYING FRACTIONS

R2 REDUCE FRACTIONS TO LOWEST TERMS

Reduce these fractions.

1. $\frac{2}{4} =$

2. $\frac{3}{6} =$

3. $\frac{4}{16} =$

4. $\frac{5}{15} =$

5. $\frac{6}{20} =$

SKILL SHEET

SIMPLIFYING FRACTIONS

C1 RECOGNIZE PROPER AND IMPROPER FRACTIONS AND MIXED NUMBERS

Circle the improper fractions.

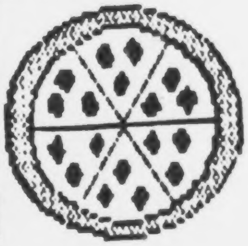
1. $\frac{10}{2}$
2. $\frac{6}{8}$
3. $\frac{1}{3}$
4. $\frac{9}{4}$
5. $\frac{10}{5}$

Circle the proper fractions.

1. $\frac{1}{5}$
2. $\frac{6}{4}$
3. $\frac{2}{7}$
4. $\frac{7}{18}$
5. $\frac{8}{5}$

Circle the mixed numbers.

1. $\frac{9}{5}$
2. $6\frac{2}{3}$
3. $2\frac{1}{10}$
4. $\frac{4}{7}$
5. $21\frac{7}{8}$



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SKILL SHEET

SIMPLIFYING FRACTIONS

C2 CONVERT IMPROPER FRACTION TO MIXED NUMBER

Change to a mixed number.

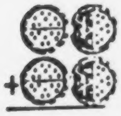
1. $\frac{6}{4} =$

2. $\frac{10}{3} =$

3. $\frac{7}{5} =$

4. $\frac{11}{10} =$

5. $\frac{9}{2} =$



Add Mixed Numbers (2.1.5)
Part I

A3

1. Add and simplify:

$$\begin{array}{r} \frac{1}{4} \\ +\frac{2}{4} \\ \hline \end{array}$$

A. $\frac{3}{16}$

B. $\frac{3}{4}$

C. $\frac{3}{8}$

D. $\frac{1}{8}$

A3

2. Add and simplify:

$$\begin{array}{r} \frac{1}{3} \\ +\frac{1}{3} \\ \hline \end{array}$$

A. $\frac{2}{3}$

B. $\frac{1}{6}$

C. $\frac{2}{6}$

D. $\frac{1}{9}$

A3

3. Add and simplify:

$$\begin{array}{r} \frac{2}{10} \\ +\frac{7}{10} \\ \hline \end{array}$$

A. $\frac{9}{20}$

B. $\frac{5}{10}$

C. $\frac{5}{20}$

D. $\frac{9}{10}$

A3

4. Add and simplify:

$$\begin{array}{r} \frac{1}{6} \\ +\frac{4}{6} \\ \hline \end{array}$$

A. $\frac{5}{12}$

B. $\frac{5}{6}$

C. $\frac{4}{6}$

D. $\frac{4}{12}$

A3

5. Add and simplify:

$$\begin{array}{r} \frac{2}{13} \\ +\frac{3}{13} \\ \hline \end{array}$$

A. $\frac{6}{13}$

B. $\frac{5}{26}$

C. $\frac{5}{13}$

D. $\frac{6}{26}$

A3

6. Add and simplify:

$$\begin{array}{r} \frac{1}{8} \\ +\frac{2}{8} \\ \hline \end{array}$$

A. $\frac{2}{8}$

B. $\frac{2}{16}$

C. $\frac{3}{16}$

D. $\frac{3}{8}$

Add Mixed Numbers (2.1.5)
Part II

A4

1. Add and simplify:

$$\begin{array}{r} \frac{1}{5} \\ +\ \frac{2}{10} \\ \hline \end{array}$$

A. $\frac{3}{15}$ C. $\frac{4}{10}$
B. $\frac{2}{5}$ D. $\frac{3}{10}$

A4

2. Add and simplify:

$$\begin{array}{r} \frac{5}{8} \\ +\ \frac{1}{4} \\ \hline \end{array}$$

A. $\frac{6}{12}$ C. $\frac{1}{2}$
B. $\frac{7}{8}$ D. $\frac{6}{8}$

A4

3. Add and simplify:

$$\begin{array}{r} \frac{2}{3} \\ +\ \frac{1}{6} \\ \hline \end{array}$$

A. $\frac{3}{9}$ C. $\frac{5}{6}$
B. $\frac{3}{6}$ D. $\frac{4}{6}$

A4

4. Add and simplify:

$$\begin{array}{r} \frac{5}{7} \\ +\ \frac{1}{14} \\ \hline \end{array}$$

A. $\frac{6}{14}$ C. $\frac{11}{14}$
B. $\frac{6}{21}$ D. $\frac{4}{14}$

A4

5. Add and simplify:

$$\begin{array}{r} \frac{1}{6} \\ +\ \frac{3}{12} \\ \hline \end{array}$$

A. $\frac{5}{12}$ C. $\frac{4}{18}$
B. $\frac{4}{12}$ D. $\frac{2}{9}$

A4

6. Add and simplify:

$$\begin{array}{r} \frac{1}{2} \\ +\ \frac{1}{4} \\ \hline \end{array}$$

A. $\frac{2}{6}$ C. $\frac{3}{4}$
B. $\frac{1}{4}$ D. $\frac{1}{6}$

Add Mixed Numbers (2.1.5)
Part III

A5

1. Add and simplify:

$$\begin{array}{r} 6\frac{1}{5} \\ +\ 3\frac{1}{5} \\ \hline \end{array}$$

A. $9\frac{2}{5}$

B. $9\frac{2}{10}$

C. $9\frac{3}{5}$

D. $9\frac{3}{10}$

A5

2. Add and simplify:

$$\begin{array}{r} 5\frac{2}{13} \\ +\ 3\frac{1}{13} \\ \hline \end{array}$$

A. $8\frac{6}{12}$

B. $8\frac{4}{13}$

C. $8\frac{3}{13}$

D. $8\frac{2}{26}$

A5

3. Add and simplify:

$$\begin{array}{r} 6\frac{2}{7} \\ +\ 6\frac{1}{7} \\ \hline \end{array}$$

A. $12\frac{3}{14}$

B. $12\frac{2}{14}$

C. $12\frac{2}{7}$

D. $12\frac{3}{7}$

A5

4. Add and simplify:

$$\begin{array}{r} 4\frac{1}{10} \\ +\ 3\frac{6}{10} \\ \hline \end{array}$$

A. $7\frac{7}{10}$

B. $7\frac{6}{20}$

C. $7\frac{7}{20}$

D. $7\frac{6}{10}$

A5

5. Add and simplify:

$$\begin{array}{r} 2\frac{2}{9} \\ +\ 1\frac{2}{9} \\ \hline \end{array}$$

A. $3\frac{2}{9}$

B. $3\frac{4}{9}$

C. $3\frac{4}{18}$

D. $3\frac{2}{18}$

A5

6. Add and simplify:

$$\begin{array}{r} 5\frac{1}{3} \\ +\ 2\frac{1}{3} \\ \hline \end{array}$$

A. $7\frac{2}{3}$

B. $7\frac{2}{6}$

C. $7\frac{1}{3}$

D. $7\frac{3}{6}$

Add Mixed Numbers (2.1.5)
Part IV

A6

1. Add and simplify:

$$\begin{array}{r} 6\frac{5}{12} \\ 5\frac{1}{6} \\ + \quad \\ \hline \end{array}$$

A. $11\frac{7}{12}$

B. $11\frac{6}{12}$

C. $11\frac{4}{12}$

D. $11\frac{5}{12}$

A6

2. Add and simplify:

$$\begin{array}{r} 8\frac{1}{4} \\ 5\frac{1}{5} \\ + \quad \\ \hline \end{array}$$

A. $13\frac{9}{20}$

B. $13\frac{2}{9}$

C. $13\frac{1}{20}$

D. $13\frac{2}{20}$

A6

3. Add and simplify:

$$\begin{array}{r} 3\frac{5}{8} \\ 5\frac{1}{4} \\ + \quad \\ \hline \end{array}$$

A. $8\frac{6}{12}$

B. $8\frac{6}{8}$

C. $8\frac{7}{8}$

D. $8\frac{5}{12}$

A6

4. Add and simplify:

$$\begin{array}{r} 7\frac{3}{12} \\ 4\frac{1}{2} \\ + \quad \\ \hline \end{array}$$

A. $11\frac{4}{14}$

B. $11\frac{4}{24}$

C. $11\frac{3}{4}$

D. $11\frac{9}{12}$

A6

5. Add and simplify:

$$\begin{array}{r} 2\frac{1}{3} \\ 1\frac{2}{4} \\ + \quad \\ \hline \end{array}$$

A. $3\frac{3}{7}$

B. $3\frac{5}{6}$

C. $3\frac{10}{12}$

D. $3\frac{2}{12}$

A6

6. Add and simplify:

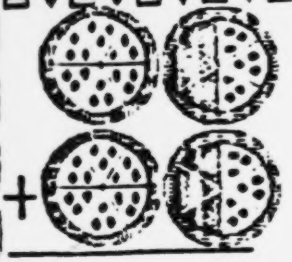
$$\begin{array}{r} 2\frac{4}{12} \\ 1\frac{6}{12} \\ + \quad \\ \hline \end{array}$$

A. $3\frac{10}{24}$

B. $3\frac{10}{12}$

C. $3\frac{4}{6}$

D. $3\frac{5}{6}$



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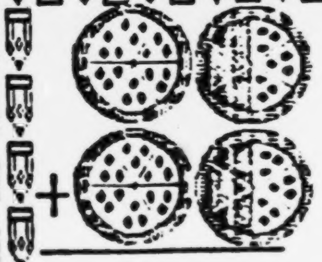
SKILL SHEET

2.1.5 ADD MIXED NUMBERS



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SKILL SHEET

2.1.5 ADD MIXED NUMBERS

A1 FIND A COMMON DENOMINATOR OR LOWEST COMMON DENOMINATOR

Find a common denominator.

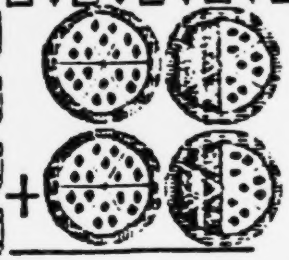
1. $\frac{1}{2}$ $\frac{1}{6}$ ______________

2. $\frac{3}{7}$ $\frac{1}{3}$ ______________

3. $\frac{8}{9}$ $\frac{2}{3}$ ______________

4. $\frac{4}{10}$ $\frac{5}{7}$ ______________

5. $\frac{1}{4}$ $\frac{1}{2}$ ______________



SKILL SHEET

2.1.5 ADD MIXED NUMBERS

A2 RENAME FRACTIONS TO A GIVEN DENOMINATOR

Rename these fractions.

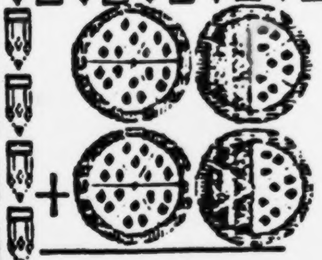
1. $\frac{1}{3} = \frac{}{6}$

2. $\frac{3}{4} = \frac{}{12}$

3. $\frac{2}{5} = \frac{}{10}$

4. $\frac{7}{8} = \frac{}{16}$

5. $\frac{6}{7} = \frac{}{21}$



SKILL SHEET

2.1.5 ADD MIXED NUMBERS

A3 ADD FRACTIONS WITH LIKE DENOMINATORS AND SIMPLIFY

Add and simplify.

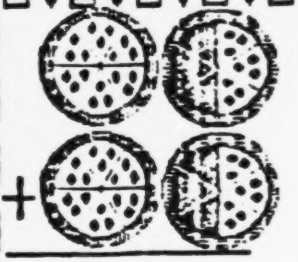
1. $\frac{1}{3} + \frac{1}{3}$

2. $\frac{2}{4} + \frac{1}{4}$

3. $\frac{2}{10} + \frac{3}{10}$

4. $\frac{1}{5} + \frac{3}{5}$

5. $\frac{1}{12} + \frac{8}{12}$



SKILL SHEET

2.1.5 ADD MIXED NUMBERS

A4 ADD FRACTIONS WITH UNLIKE DENOMINATORS AND SIMPLIFY

Add and simplify.

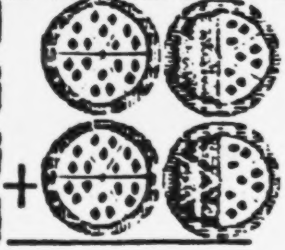
1. $$\begin{array}{r} \frac{1}{3} \\ + \frac{2}{6} \\ \hline \end{array}$$

2. $$\begin{array}{r} \frac{1}{6} \\ + \frac{1}{12} \\ \hline \end{array}$$

3. $$\begin{array}{r} \frac{1}{6} \\ + \frac{2}{4} \\ \hline \end{array}$$

4. $$\begin{array}{r} \frac{1}{8} \\ + \frac{2}{4} \\ \hline \end{array}$$

5. $$\begin{array}{r} \frac{5}{8} \\ + \frac{1}{16} \\ \hline \end{array}$$



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SKILL SHEET

2.1.5 ADD MIXED NUMBERS

A5 ADD MIXED NUMBERS WITH LIKE DENOMINATORS AND SIMPLIFY

Add and simplify.

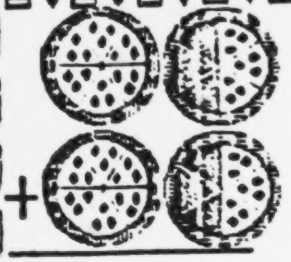
1.
$$\begin{array}{r} 5\frac{1}{3} \\ +\ 3\frac{1}{3} \\ \hline \end{array}$$

2.
$$\begin{array}{r} 1\frac{3}{9} \\ +\ 2\frac{1}{9} \\ \hline \end{array}$$

3.
$$\begin{array}{r} 5\frac{1}{6} \\ +\ 2\frac{1}{6} \\ \hline \end{array}$$

4.
$$\begin{array}{r} 6\frac{2}{7} \\ +\ 7\frac{1}{7} \\ \hline \end{array}$$

5.
$$\begin{array}{r} 3\frac{1}{4} \\ +\ 1\frac{1}{4} \\ \hline \end{array}$$



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SKILL SHEET

2.1.5 ADD MIXED NUMBERS

A6 ADD MIXED NUMBERS WITH UNLIKE DENOMINATORS AND SIMPLIFY

Add and simplify.

1. $7\frac{3}{12}$

$+$

$3\frac{1}{2}$

2. $3\frac{1}{3}$

$+$

$2\frac{1}{2}$

3. $2\frac{3}{10}$

$+$

$1\frac{2}{5}$

4. $6\frac{5}{8}$

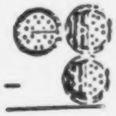
$+$

$5\frac{1}{4}$

5. $13\frac{1}{6}$

$+$

$1\frac{1}{3}$



Subtract Mixed Numbers (2.1.6)
Part I

S3

1. Subtract and simplify:

$$\begin{array}{r} \frac{3}{8} \\ -\ \frac{2}{8} \\ \hline \end{array}$$

A. $\frac{5}{8}$ C. $\frac{1}{8}$

B. $\frac{1}{16}$ D. $\frac{5}{16}$

S3

2. Subtract and simplify:

$$\begin{array}{r} \frac{4}{5} \\ -\ \frac{2}{5} \\ \hline \end{array}$$

A. $\frac{2}{5}$ C. $\frac{2}{10}$

B. $\frac{6}{5}$ D. $\frac{6}{10}$

S3

3. Subtract and simplify:

$$\begin{array}{r} \frac{8}{12} \\ -\ \frac{6}{12} \\ \hline \end{array}$$

A. $\frac{14}{12}$ C. $\frac{1}{6}$

B. $\frac{2}{12}$ D. $\frac{2}{7}$

S3

4. Subtract and simplify:

$$\begin{array}{r} \frac{6}{7} \\ -\ \frac{2}{7} \\ \hline \end{array}$$

A. $\frac{8}{14}$ C. $\frac{4}{14}$

B. $\frac{4}{7}$ D. $\frac{3}{7}$

S3

5. Subtract and simplify:

$$\begin{array}{r} \frac{8}{10} \\ -\ \frac{1}{10} \\ \hline \end{array}$$

A. $\frac{9}{10}$ C. $\frac{6}{10}$

B. $\frac{7}{20}$ D. $\frac{7}{10}$

S3

6. Subtract and simplify:

$$\begin{array}{r} \frac{9}{15} \\ -\ \frac{6}{15} \\ \hline \end{array}$$

A. $\frac{3}{15}$ C. $\frac{1}{10}$

B. $\frac{3}{30}$ D. $\frac{1}{5}$

Subtract Mixed Numbers (2.1.6)
Part II

S4

1. Subtract and simplify:

$$\begin{array}{r} \frac{7}{8} \\ -\ \frac{3}{4} \\ \hline \end{array}$$

A. $\frac{1}{2}$ C. $\frac{1}{8}$

B. $\frac{6}{12}$ D. $\frac{5}{12}$

S4

2. Subtract and simplify:

$$\begin{array}{r} \frac{4}{5} \\ -\ \frac{1}{10} \\ \hline \end{array}$$

A. $\frac{3}{10}$ C. $\frac{5}{10}$

B. $\frac{7}{10}$ D. $\frac{3}{5}$

S4

3. Subtract and simplify:

$$\begin{array}{r} \frac{4}{5} \\ -\ \frac{3}{15} \\ \hline \end{array}$$

A. $\frac{9}{15}$ C. $\frac{7}{15}$

B. $\frac{1}{15}$ D. $\frac{3}{5}$

S4

4. Subtract and simplify:

$$\begin{array}{r} \frac{8}{18} \\ -\ \frac{1}{6} \\ \hline \end{array}$$

A. $\frac{7}{18}$ C. $\frac{5}{18}$

B. $\frac{7}{6}$ D. $\frac{5}{6}$

S4

5. Subtract and simplify:

$$\begin{array}{r} \frac{4}{6} \\ -\ \frac{1}{2} \\ \hline \end{array}$$

A. $\frac{3}{6}$ C. $\frac{1}{6}$

B. $\frac{3}{4}$ D. $\frac{2}{6}$

S4

6. Subtract and simplify:

$$\begin{array}{r} \frac{6}{7} \\ -\ \frac{2}{14} \\ \hline \end{array}$$

A. $\frac{4}{14}$ C. $\frac{10}{14}$

B. $\frac{5}{7}$ D. $\frac{4}{7}$

Subtract Mixed Numbers (2.1.6)
Part III

S5

1. Subtract and simplify:

$$\begin{array}{r} 9\frac{2}{5} \\ -\;2\frac{1}{5} \\ \hline \end{array}$$

A. $7\frac{3}{5}$

B. $7\frac{3}{10}$

C. $7\frac{1}{5}$

D. $7\frac{2}{5}$

S5

2. Subtract and simplify:

$$\begin{array}{r} 8\frac{2}{3} \\ -\;3\frac{1}{3} \\ \hline \end{array}$$

A. $5\frac{1}{3}$

B. $5\frac{3}{6}$

C. $5\frac{1}{6}$

D. $5\frac{2}{3}$

S5

3. Subtract and simplify:

$$\begin{array}{r} 9\frac{8}{18} \\ -\;2\frac{2}{18} \\ \hline \end{array}$$

A. $7\frac{10}{18}$

B. $7\frac{6}{18}$

C. $7\frac{1}{3}$

D. $7\frac{3}{9}$

S5

4. Subtract and simplify:

$$\begin{array}{r} 6\frac{3}{4} \\ -\;3\frac{2}{4} \\ \hline \end{array}$$

A. $3\frac{1}{4}$

B. $3\frac{5}{8}$

C. $3\frac{3}{4}$

D. $3\frac{1}{8}$

S5

5. Subtract and simplify:

$$\begin{array}{r} 5\frac{5}{7} \\ -\;1\frac{2}{7} \\ \hline \end{array}$$

A. $4\frac{7}{14}$

B. $4\frac{4}{7}$

C. $4\frac{9}{7}$

D. $4\frac{3}{7}$

S5

6. Subtract and simplify:

$$\begin{array}{r} 8\frac{6}{12} \\ -\;7\frac{3}{12} \\ \hline \end{array}$$

A. $1\frac{3}{12}$

B. $1\frac{9}{12}$

C. $1\frac{2}{6}$

D. $1\frac{1}{4}$

Subtract Mixed Numbers (2.1.6)
Part IV

S6

1. Subtract and simplify:

$$\begin{array}{r} 4\frac{9}{10} \\ -\ 2\frac{1}{5} \\ \hline \end{array}$$

A. $2\frac{8}{10}$

B. $2\frac{4}{5}$

C. $2\frac{7}{10}$

D. $2\frac{6}{10}$

S6

2. Subtract and simplify:

$$\begin{array}{r} 5\frac{1}{3} \\ -\ 2\frac{1}{4} \\ \hline \end{array}$$

A. $3\frac{2}{12}$

B. $3\frac{2}{7}$

C. $3\frac{1}{12}$

D. $3\frac{3}{12}$

S6

3. Subtract and simplify:

$$\begin{array}{r} 6\frac{5}{6} \\ -\ 5\frac{4}{12} \\ \hline \end{array}$$

A. $1\frac{6}{12}$

B. $1\frac{1}{12}$

C. $1\frac{1}{2}$

D. $1\frac{5}{12}$

S6

4. Subtract and simplify:

$$\begin{array}{r} 7\frac{9}{12} \\ -\ 6\frac{1}{3} \\ \hline \end{array}$$

A. $1\frac{5}{12}$

B. $1\frac{8}{12}$

C. $1\frac{10}{12}$

D. $1\frac{7}{12}$

S6

5. Subtract and simplify:

$$\begin{array}{r} 9\frac{1}{2} \\ -\ 2\frac{1}{9} \\ \hline \end{array}$$

A. $7\frac{2}{18}$

B. $7\frac{4}{18}$

C. $7\frac{7}{18}$

D. $7\frac{5}{18}$

S6

6. Subtract and simplify:

$$\begin{array}{r} 7\frac{3}{5} \\ -\ 4\frac{2}{20} \\ \hline \end{array}$$

A. $3\frac{5}{20}$

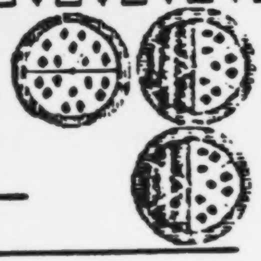
B. $3\frac{10}{20}$

C. $3\frac{6}{20}$

D. $3\frac{1}{2}$

SKILL SHEET

2.1.6 SUBTRACT MIXED NUMBERS



SKILL SHEET

2.1.6 SUBTRACT MIXED NUMBERS

S3 SUBTRACT FRACTIONS WITH LIKE DENOMINATORS AND SIMPLIFY

Subtract and simplify.

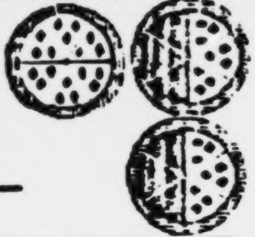
1. $\begin{array}{r} \frac{5}{8} \\ -\frac{3}{8} \\ \hline \end{array}$

2. $\begin{array}{r} \frac{9}{14} \\ -\frac{2}{14} \\ \hline \end{array}$

3. $\begin{array}{r} \frac{9}{5} \\ -\frac{6}{5} \\ \hline \end{array}$

4. $\begin{array}{r} \frac{8}{10} \\ -\frac{6}{10} \\ \hline \end{array}$

5. $\begin{array}{r} \frac{9}{15} \\ -\frac{1}{15} \\ \hline \end{array}$



SKILL SHEET

2.1.6 SUBTRACT MIXED NUMBERS

S4 SUBTRACT FRACTIONS WITH UNLIKE DENOMINATORS AND SIMPLIFY

Subtract and simplify.

1. $\frac{7}{8}$

   $- \frac{1}{6}$

2. $\frac{4}{6}$

   $- \frac{1}{2}$

3. $\frac{6}{9}$

   $- \frac{1}{3}$

4. $\frac{5}{10}$

   $- \frac{3}{30}$

5. $\frac{6}{7}$

   $- \frac{3}{14}$

SKILL SHEET

2.1.6 SUBTRACT MIXED NUMBERS

S5 SUBTRACT MIXED NUMBERS WITH LIKE DENOMINATORS AND SIMPLIFY

Subtract and simplify.

1. $$\begin{array}{r} 5\frac{3}{6} \\ -\quad 2\frac{1}{6} \\ \hline \end{array}$$

2. $$\begin{array}{r} 10\frac{5}{7} \\ -\quad 5\frac{2}{7} \\ \hline \end{array}$$

3. $$\begin{array}{r} 18\frac{2}{3} \\ -\quad 9\frac{1}{3} \\ \hline \end{array}$$

4. $$\begin{array}{r} 13\frac{3}{4} \\ -\quad 7\frac{2}{4} \\ \hline \end{array}$$

5. $$\begin{array}{r} 6\frac{6}{12} \\ -\quad 3\frac{3}{12} \\ \hline \end{array}$$

SKILL SHEET

2.1.6 SUBTRACT MIXED NUMBERS

S6 SUBTRACT MIXED NUMBERS WITH UNLIKE DENOMINATORS AND SIMPLIFY

Subtract and simplify.

1. $12\frac{3}{5}$

$-\;9\frac{2}{20}$

2. $6\frac{5}{10}$

$-\;3\frac{4}{20}$

3. $7\frac{3}{4}$

$-\;3\frac{1}{2}$

4. $11\frac{9}{12}$

$-\;6\frac{1}{3}$

5. $5\frac{1}{3}$

$-\;2\frac{1}{4}$

x 4

Multiply a Whole Number by a Fraction (2.1.7)

M1

1. Multiply and simplify:

$$5 \times \frac{3}{5} =$$

A. $\frac{5}{15}$ C. $\frac{15}{5}$

B. 3 D. $\frac{15}{25}$

M1

2. Multiply and simplify:

$$4 \times \frac{1}{8} =$$

A. $\frac{4}{8}$ C. $\frac{2}{4}$

B. $\frac{1}{8}$ D. $\frac{1}{2}$

M1

3. Multiply and simplify:

$$7 \times \frac{5}{6} =$$

A. $\frac{6}{35}$ C. $\frac{5}{42}$

B. $5\frac{5}{6}$ D. $\frac{35}{6}$

M1

4. Multiply and simplify:

$$\frac{2}{3} \times 3 =$$

A. $\frac{6}{3}$ C. 2

B. $\frac{3}{6}$ D. $\frac{2}{9}$

M1

5. Multiply and simplify:

$$\frac{2}{3} \times 8 =$$

A. $\frac{16}{3}$ C. $\frac{2}{24}$

B. $5\frac{1}{3}$ D. $\frac{1}{12}$

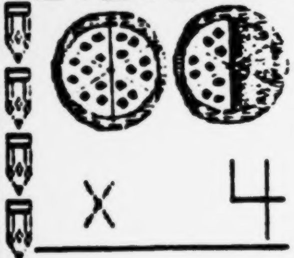
M1

6. Multiply and simplify:

$$6 \times \frac{3}{4} =$$

A. $\frac{4}{18}$ C. $\frac{18}{4}$

B. $\frac{2}{9}$ D. $4\frac{1}{2}$



SKILL SHEET

2.1.7 MULTIPLY A WHOLE NUMBER BY A FRACTION

SKILL SHEET

2.1.7 MULTIPLY A WHOLE NUMBER BY A FRACTION

M1 MULTIPLY A WHOLE NUMBER BY A FRACTION

Multiply and simplify.

1. $\frac{2}{3} \times 3 =$

2. $\frac{6}{8} \times 5 =$

3. $6 \times \frac{3}{4} =$

4. $4 \times \frac{1}{8} =$

5. $\frac{1}{6} \times 3 =$

Find a Missing Term in a Proportion (2.1.13)

T1

1. Find the missing term.

$$\frac{N}{3} = \frac{2}{6}$$

T1

4. Find the missing term.

$$\frac{3}{N} = \frac{2}{10}$$

T1

2. Find the missing term.

$$\frac{1}{2} = \frac{N}{14}$$

T1

5. Find the missing term.

$$\frac{2}{3} = \frac{6}{N}$$

T1

3. Find the missing term.

$$\frac{N}{10} = \frac{14}{20}$$

T1

6. Find the missing term.

$$\frac{3}{N} = \frac{15}{45}$$

SKILL SHEET

2.1.13 FIND THE MISSING TERM IN A PROPORTION

SKILL SHEET

2.1.13 FIND THE MISSING TERM IN A PROPORTION

T1 FIND THE MISSING TERM IN A PROPORTION

Find the missing term.

1. $\frac{3}{N} = \frac{2}{10}$

2. $\frac{1}{2} = \frac{N}{14}$

3. $\frac{N}{10} = \frac{14}{20}$

4. $\frac{2}{3} = \frac{6}{N}$

5. $\frac{N}{3} = \frac{2}{6}$

DECIMAL OPERATIONS

PRE-TEST and POST-TEST

Name____________________________________ Date__________________________________

1. ADD:

$$\begin{array}{r}462.9\\ +\ 63.48\\ \hline\end{array}$$

A. 109.77
B. 527.38
C. 109.67
D. 526.38

2. ADD:

$$\begin{array}{r}12.8\\ 1.35\\ +\ 43.49\\ \hline\end{array}$$

A. 56.92
B. 57.64
C. 57.74
D. 57.54

3. ADD:

$$\begin{array}{r}163.82\\ +\ 31.48\\ \hline\end{array}$$

A. 195.30
B. 195.20
C. 194.30
D. 194.20

4. ADD:

$$\begin{array}{r}6.98\\ 14.71\\ +\ 7.5\\ \hline\end{array}$$

A. 29.19
B. 21.44
C. 22.44
D. 29.29

5. SUBTRACT:

$$\begin{array}{r}99.59\\ -84.08\\ \hline\end{array}$$

A. 1.551
B. 155.1
C. .1551
D. 15.51

6. SUBTRACT:

$$\begin{array}{r}75.6\\ -49.8\\ \hline\end{array}$$

A. 258
B. 25.8
C. 2.58
D. 0.258

7. SUBTRACT:

$$\begin{array}{r}16.00\\ -\ 5.98\\ \hline\end{array}$$

A. 1.002
B. 10.02
C. 100.2
D. .1002

8. SUBTRACT:

$$\begin{array}{r}50.09\\ -\ 8.98\\ \hline\end{array}$$

A. 41.11
B. 4.111
C. 411.1
D. .4111

9. MULTIPLY:

$$\begin{array}{r}74.1\\ \times\ 91\\ \hline\end{array}$$

A. 6643.1
B. 6633.1
C. 6743.1
D. 6733.1

10. MULTIPLY:

$$\begin{array}{r}20.8\\ \times\ 6.4\\ \hline\end{array}$$

A. 133.12
B. 133.22
C. 132.12
D. 13.312

DECIMAL OPERATIONS

PRE-TEST and POST-TEST
(Continuation)

11. MULTIPLY:

$$\begin{array}{r} .68 \\ \underline{\times 1.9} \end{array}$$

A. 1.282
B. 6.80
C. 1.292
D. 12.92

12. MULTIPLY:

$$\begin{array}{r} 4.51 \\ \underline{\times\ 9.8} \end{array}$$

A. 76.67
B. 44.198
C. 7.667
D. 441.98

13. DIVIDE:

$$33\overline{)151.8}$$

A. 4.6
B. 0.46
C. 46
D. 5.6

14. DIVIDE:

$$5\overline{)34.05}$$

A. 0.681
B. 681
C. 68.1
D. 6.81

15. DIVIDE:

$$8\overline{)11.60}$$

A. .145
B. 14.5
C. 1.45
D. 145

16. DIVIDE:

$$4\overline{).84}$$

A. 0.021
B. 0.21
C. 2.1
D. 21

17. SOLVE:

65% of 32 = ?

A. 2.08
B. 20.8
C. 208
D. 21.8

18. SOLVE:

3% of 621 = ?

A. 186.3
B. 185.3
C. 18.53
D. 18.63

19. SOLVE:

20% of 127 = ?

A. 2540
B. 254
C. 25.4
D. 2.54

20. SOLVE:

20% of 62 = ?

A. 12.4
B. 124
C. 1.24
D. 1240

Add Decimals (2.1.8)

OD1

1. Select the problem that is the same.

.3 + 3.4 = ______

A. .3
+ 3.4

B. 3.
+ 3.4

C. .3
+ 4.3

OD1

2. Select the problem that is the same.

3.54 + 6.25 + .30 = ______

A. 3.54
62.5
+ 3.0

B. 3.54
6.25
+ .30

C. 3.54
62.50
+ .30

OD1

3. Select the problem that is the same.

6.25 + .54 + .20 = ______

A. 6.25
.54
+ .20

B. 62.6
5.4
+ 2.0

C. 62.50
5.40
+ .20

AD1

4. Add
.3
+ .5

A. .8 C. .9
B. 8 D. .6

AD1

5. Add
1.7
3.2
+ 3.0

A. 8.7 C. 9.7
B. 7.9 D. 6.8

AD1

6. Add
5.2 + 2.5 + 1.2 = ____

A. 8.9 C. 9.7
B. 6.4 D. 7.9

Add Decimals (2.1.8), cont.

AD3

7. Add

$.53 + 4.35 =$ _____

A. 48.4 C. 8.48
B. 84.4 D. 4.88

AD3

8. Add

$$\begin{array}{r} 24.28 \\ +\ 52.61 \\ \hline \end{array}$$

A. 76.89 C. 7.689
B. 7.689 D. 87.98

AD3

9. Add

$6.23 + 2.74 =$ _______

A. 89.7 C. 8.97
B. 78.9 D. 9.87

AD2

10. Add

$$\begin{array}{r} 1.5 \\ +\ 53.9 \\ \hline \end{array}$$

A. 44.5 C. 55.4
B. 5.54 D. 54.5

AD2

11. Add

$.7 + .6 + 8.3 =$ ______

A. 8.5 C. 6.9
B. 8.6 D. 9.6

AD2

12. Add

$$\begin{array}{r} 4.8 \\ 2.5 \\ +\ .4 \\ \hline \end{array}$$

A. 6.7 C. 7.7
B. 77 D. 6.5

Add Decimals (2.1.8), cont.

AD4

13. Add

1.23 + .87 = _____

A. 21.0 C. 2.10
B. 12.1 D. 2.01

AD4

14. Add

$$\begin{array}{r} 67.83 \\ +\ 49.68 \\ \hline \end{array}$$

A. 11.751 C. 151.7
B. 117.51 D. 711.15

AD4

15. Add

.43 + 82.69 = ________

A. 83.12 C. 82.31
B. 81.32 D. 60.00

Z1

16. Circle the number that is the same.

$\boxed{65.00}$

A. 065 C. 65
B. 065. D. 60.00

Z1

17. Circle the number that is the same.

$\boxed{750.0}$

A. 750 C. 705
B. 75 D. 700

Z1

18. Circle the number that is the same.

$\boxed{405.00}$

A. 45 C. 450
B. 405 D. 400.00

Z1

19. Circle the number that is the same.

$\boxed{54.70}$

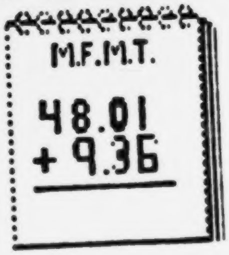
A. 54.8 C. 54.7
B. 54.00 D. 54

Z1

20. Circle the number that is the same.

$\boxed{92.30}$

A. 92 C. 92.30
B. 92.00 D. 92.3


M.F.M.T.
48.01
+ 9.36

2.1.8 ADD DECIMALS

SKILL SHEET

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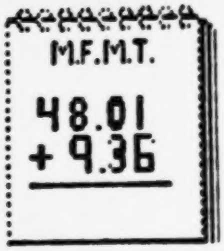

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SKILL SHEET

2.1.8 ADD DECIMALS

OD1 WRITE NUMBERS IN A COLUMN ACCORDING TO DECIMAL PLACES

Directions: Rewrite the following addition problems in a vertical format.

1. 38.57 + 6.54 + 120.1 = ______

______ • ______

______ • ______

______ • ______

2. 54.84 + .57 + 67.3 = ______

______ • ______

______ • ______

______ • ______

3. .3 + 6.25 + .8 + .9 = ______

______ • ______

______ • ______

______ • ______

4. .56 + 6.42 + 125.50 = ______

______ • ______

______ • ______

______ • ______

5. .8 + 2.1 + 6.3 + 8 = ______

______ • ______

______ • ______

______ • ______

6. 1.01 + 10.1 + 10 = ______

______ • ______

______ • ______

______ • ______

M.F.M.T.

$$\begin{array}{r} 48.01 \\ +\ 9.36 \\ \hline \end{array}$$

____

____

SKILL SHEET

2.1.8 ADD DECIMALS

AD1 ADD UP TO 3 NUMBERS WITH 1 DECIMAL PLACE WITHOUT REGROUPING

AD3 ADD 2 NUMBERS WITH 2 DECIMAL PLACES WITHOUT REGROUPING

Add

1.
$$\begin{array}{r} .6 \\ 3.0 \\ +\ .2 \\ \hline \end{array}$$

2.
$$\begin{array}{r} 2.50 \\ +\ .18 \\ \hline \end{array}$$

3.
$$\begin{array}{r} .3 \\ 3.5 \\ +\ 6.1 \\ \hline \end{array}$$

4. 7.3 + 2.5 = ________

5. 6.86 + 3.13 = ________

6.
$$\begin{array}{r} 5.62 \\ +\ 4.37 \\ \hline \end{array}$$

M.F.M.T.

```
 48.01
+ 9.36
```

SKILL SHEET

2.1.8 ADD DECIMALS

AD2 ADD UP TO 3 NUMBERS WITH 1 DECIMAL PLACE WITH REGROUPING

AD4 ADD 2 NUMBERS WITH 2 DECIMAL PLACES WITH REGROUPING

Add

1.
```
  8.6
  3.4
+  .9
```

2.
```
  6.85
+ 5.37
```

3.
```
   .9
  5.6
+ 9.8
```

4.
```
  6.9
+ 9.4
```

5. 7.47 + 7.67 = ________

6.
```
  3.64
+ 8.59
```

M.F.M.T.

48.01
+ 9.36

____

____

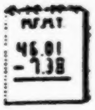
SKILL SHEET

2.1.8 ADD DECIMALS

Z1 RECOGNIZE THAT WITH ANY DECIMAL ENDING IN ZERO(S), THE ZERO(S) MAY BE DROPPED

Directions: Are these numbers equivalent?
Write **yes** or **no**.

1. **5.50 and 5.5** ________________
2. **17.100 and 17.1** ________________
3. **131.0 and 131** ________________
4. **63.03 and 63.0300** ________________
5. **25.3 and 253** ________________
6. **47.92 and 479.2** ________________
7. **64.4 and 64.40** ________________



Subtract Decimals (2.1.9)

SD1

1. Subtract $\begin{array}{r} 6.9 \\ -\ 3.4 \\ \hline \end{array}$

A. 3.5 C. 35
B. 3.6 D. 5.3

SD1

2. Subtract $\begin{array}{r} 5.6 \\ -\ .6 \\ \hline \end{array}$

A. 60 C. 50
B. 5 D. 6

SD1

3. Subtract $\begin{array}{r} 13.7 \\ -\ 10.5 \\ \hline \end{array}$

A. 2.3 C. 3.2
B. 32 D. 3.3

SD3

4. Subtract $\begin{array}{r} 15.62 \\ -\ 13.31 \\ \hline \end{array}$

A. 2.13 C. 12.3
B. 23.1 D. 2.31

SD3

5. Subtract $\begin{array}{r} 64.88 \\ -\ 51.35 \\ \hline \end{array}$

A. 13.53 C. 13.35
B. 15.33 D. 15.53

SD3

6. Subtract $\begin{array}{r} 8.54 \\ -\ .22 \\ \hline \end{array}$

A. 8.23 C. 83.2
B. 8.32 D. 82.3

Subtract Decimals (2.1.9), cont.

SD2

7 Subtract

```
  84.2
-  2.9
```

A. 83.1 C. 38.1
B. 80.3 D. 81.3

SD2

8. Subtract

```
  67.3
- 12.8
```

A. 45.5 C. 54.5
B. 50.4 D. 54.4

SD2

9. Subtract

```
  54.2
-  9.8
```

A. 4.44 C. 40.4
B. 44.4 D. 41.4

SD4

10. Subtract

```
  14.65
- 10.70
```

A. 3.95 C. 39.5
B. 2.95 D. 29.5

SD4

11. Subtract

```
  48.54
- 25.96
```

A. 22.85 C. 22.58
B. 23.58 D. 21.85

SD4

12. Subtract

```
  58.24
-  6.48
```

A. 57.66 C. 51.76
B. 55.67 D. 52.76

M.F.M.T.

46.01
- 7.38

SKILL SHEET

2.1.9 SUBTRACT DECIMALS

M.F.M.T.

$$\begin{array}{r} 46.01 \\ -\ 7.38 \\ \hline \end{array}$$

SKILL SHEET

2.1.9 SUBTRACT DECIMALS

SD1 SUBTRACT 2 NUMBERS WITH ONE DECIMAL PLACE WITHOUT REGROUPING

SD3 SUBTRACT 2 NUMBERS WITH TWO DECIMAL PLACES WITHOUT REGROUPING

Subtract

1. $\begin{array}{r} 6.9 \\ -\ 2.9 \\ \hline \end{array}$

2. $\begin{array}{r} 6.89 \\ -\ .35 \\ \hline \end{array}$

3. $\begin{array}{r} 28.67 \\ -\ 4.5 \\ \hline \end{array}$

4. $\begin{array}{r} 57.38 \\ -\ 24.14 \\ \hline \end{array}$

5. $\begin{array}{r} 2.8 \\ -\ .6 \\ \hline \end{array}$

6. $\begin{array}{r} 7.6 \\ -\ 3.3 \\ \hline \end{array}$

M.F.M.T.

$$\begin{array}{r} 46.01 \\ -\ 7.38 \\ \hline \end{array}$$

____

____

SKILL SHEET

2.1.9 SUBTRACT DECIMALS

SD2 SUBTRACT 2 NUMBERS WITH ONE DECIMAL PLACE WITH REGROUPING

SD4 SUBTRACT 2 NUMBERS WITH UP TO TWO DECIMAL PLACES WITH REGROUPING

Subtract

1. $\begin{array}{r} 7.3 \\ -\ 5.9 \\ \hline \end{array}$

2. $\begin{array}{r} 8.50 \\ -\ 6.47 \\ \hline \end{array}$

3. $\begin{array}{r} 64.34 \\ -\ 21.56 \\ \hline \end{array}$

4. $\begin{array}{r} 7.53 \\ -\ .82 \\ \hline \end{array}$

5. $\begin{array}{r} 6.3 \\ -\ .8 \\ \hline \end{array}$

6. $\begin{array}{r} 43.2 \\ -\ 1.8 \\ \hline \end{array}$

M.F.M.T.

46.01
- 7.38

SKILL SHEET

2.1.9 SUBTRACT DECIMALS

Z1 RECOGNIZE THAT WITH ANY DECIMAL ENDING IN ZERO(S), THE ZERO(S) MAY BE DROPPED

Directions: Choose the number equivalent to the one given.

1. 7.50

A. 75
B. 7.05
C. 750
D. 7.5

2. .100

A. 10
B. .1
C. .001
D. 100

3. 41.60

A. 416
B. 4160
C. 4.16
D. 41.6

4. 3.640

A. 364
B. 3.604
C. 3.64
D. 36.4

5. .90

A. .09
B. .9
C. 9.0
D. 90

6. 8.00

A. 800
B. 8
C. .800
D. .80

Multiply Decimals (2.1.10)

MD1

1. Tell how many decimal places should be in the answer.

    7.25
X 4.3

A. 1   C. 3
B. 2   D. 4

MD1

2. Tell how many decimal places should be in the answer.

   .23
X 1.3

A. 1   C. 3
B. 2   D. 4

MD1

3. Tell how many decimal places should be in the answer.

  4.72
X .13

A. 1   C. 3
B. 2   D. 4

MD1

4. Tell how many decimal places should be in the answer.

  4.1
X 4

A. 1   C. 3
B. 2   D. 4

MD2

5. Place the decimal correctly in the answer.

  4.7
X 1.3

A. 6.11   C. .611
B. 61.1   D. 611

MD2

6. Place the decimal correctly in the answer.

  3.6
X 3

A. 108   C. .108
B. 1.08   D. 10.8

MD3

7. Place the decimal correctly in the answer.

   .35
X 1.1

A. 3.85   C. 385
B. 38.5   D. .385

MD

8. Place the decimal correctly in the answer.

  1.22
X .12

A. 146.4   C. 14.64
B. 1464   D. .1464

Multiply Decimals (2.1.10), cont.

MD3

9. Place the decimal correctly in the answer.

$$\begin{array}{r} 1.4 \\ \text{X } .31 \\ \hline \end{array}$$

A. 4.34 C. .434
B. 43.4 D. 434

MD2

10. Place the decimal correctly in the answer.

$$\begin{array}{r} 7.1 \\ \text{X } 2.1 \\ \hline \end{array}$$

A. 149.1 C. 1.491
B. 14.91 D. 1491

MD4

11. Multiply

$$\begin{array}{r} 34.2 \\ \text{X } 1.2 \\ \hline \end{array}$$

MD4

12. Multiply

$$\begin{array}{r} 78.9 \\ \text{X } .42 \\ \hline \end{array}$$

MD4

13. Multiply

$$\begin{array}{r} 16.8 \\ \text{X } 30 \\ \hline \end{array}$$

MD4

14. Multiply

$$\begin{array}{r} 5.09 \\ \text{X } 8.4 \\ \hline \end{array}$$

M.F.M.T.

106.91
x 7.83

SKILL SHEET

2.1.10 MULTIPLY DECIMALS

M.F.M.T.

$$\begin{array}{r} 106.91 \\ \times\ 783 \\ \hline \end{array}$$

SKILL SHEET

2.1.10 MULTIPLY DECIMALS

MD1 IDENTIFY NUMBER OF DECIMAL PLACES IN THE PRODUCT

How many decimal places will be in each product?
Put your answer in the box.

1. $\begin{array}{r} 4.2 \\ \times\ 1.6 \\ \hline \end{array}$ ☐

4. $\begin{array}{r} 5.5 \\ \times\ 1.3 \\ \hline \end{array}$ ☐

2. $\begin{array}{r} .57 \\ \times\ 1.3 \\ \hline \end{array}$ ☐

5. $\begin{array}{r} 6.3 \\ \times\ 2.4 \\ \hline \end{array}$ ☐

3. $\begin{array}{r} 2.33 \\ \times\ 1.22 \\ \hline \end{array}$ ☐

6. $\begin{array}{r} 7.24 \\ \times\ 1.3 \\ \hline \end{array}$ ☐

M.F.M.T.

106.91
x 783

SKILL SHEET

2.1.10 MULTIPLY DECIMALS

MD2 PLACE DECIMAL POINT CORRECTLY IN EACH PRODUCT

Directions: Place the decimal point correctly in each product.

1\.
3.3
X 19
297
330
627

2\.
7.9
X 2
158

3\.
1.2
X 1.5
60
120
180

4\.
6.7
X 5.2
134
3350
3484

5\.
.5
X 7
35

6\.
6.5
X .3
195

M.F.M.T.

106.91
x 783

SKILL SHEET

2.1.10 MULTIPLY DECIMALS

MD3 PLACE DECIMAL POINT CORRECTLY IN THE PRODUCT WITH 3 OR 4 DECIMAL PLACES

Directions: Place the decimal point correctly in each product.

1\.
8.3
X .94
332
7470
7802

2\.
3.24
X 1.21
324
6480
32400
39204

3\.
.25
X .12
50
250
300

4\.
6.24
X .2
1248

5\.
3.21
X .32
642
9630
10272

6\.
4.2
X .11
42
420
462

M.F.M.T.

106.91
x 78.3

SKILL SHEET

2.1.10 MULTIPLY DECIMALS

MD4 MULTIPLY A 2- TO 3-DIGIT NUMBER BY A 2-DIGIT NUMBER WITH UP TO 2 DECIMAL PLACES IN EACH NUMBER

Multiply

1. 3.3
X 4.2

2. 7.9
X 64

3. 60.2
X 2.3

4. 5.60
X 5.2

5. .89
X 57

6. 3.95
X 1.4

M.F.M.T.

106.91
x 783

SKILL SHEET

2.1.10 MULTIPLY DECIMALS

Z1 RECOGNIZE THAT WITH ANY DECIMAL ENDING IN ZERO(S), THE ZERO(S) MAY BE DROPPED

Directions: Are these numbers equivalent?
Write **yes** or **no**.

1. 7.50 and 75.0 ______________
2. 1.100 and 1.1 ______________
3. 31.0 and 31 ______________
4. 46.09 and 46.0900 ______________
5. 65.5 and 655 ______________
6. 417.90 and 417.09 ______________
7. 4.4 and 4.40 ______________

M/MT.
6/1/83

Divide Decimals (2.1.11)

DD1

1. Place the decimal correctly in the answer.

$5 \overline{)75.5}$

A. 15.1 C. .151
B. 1.51 D. 151

DD1

2. Place the decimal correctly in the answer.

$8 \overline{)64.8}$

A. .81 C. 81
B. 8.1 D. .081

DD1

3. Place the decimal correctly in the answer.

$13 \overline{)2.73}$

A. 2.1 C. .021
B. .21 D. 21

DD1

4. Place the decimal correctly in the answer.

$25 \overline{)400.5}$

A. 160.2 C. .1602
B. 16.02 D. 1.602

DD2

5. Divide

$2 \overline{)5.6}$

DD2

6. Divide

$7 \overline{)93.1}$

DD2

7. Divide

$4 \overline{)2.68}$

DD2

8. Divide

$5 \overline{)65.25}$

Divide Decimals (2.1.11), cont.

DD2

9. Divide

$6\overline{)521.4}$

DD3

10. Divide

$10\overline{)5.0}$

DD3

11. Divide

$12\overline{)4.92}$

DD3

12. Divide

$31\overline{)58.9}$

DD3

13. Divide

$14\overline{)333.2}$

DD3

14. Divide

$78\overline{)72.54}$

M.F.M.T.

$6\overline{)78.3}$

2.1.11 DIVIDE DECIMALS

SKILL SHEET

M.F.M.T.

6⟌783

SKILL SHEET

2.1.11 DIVIDE DECIMALS

DD1 PLACE THE DECIMAL POINT IN THE QUOTIENT CORRECTLY WHEN DIVIDING BY A WHOLE NUMBER

Directions: Place the decimal point correctly in each quotient.

1.
```
     134
  3) 4.02
     3
     10
      9
      12
      12
       0
```

2.
```
     2211
  4) 88.44
     8
     08
      8
      04
       4
       04
        4
        0
```

3.
```
       207
  11) 22.77
      22
       07
        0
        77
        77
         0
```

4.
```
     131
  5) 65.5
     5
     15
     15
      05
       5
       0
```

5.
```
     91
  7) 63.7
     63
      07
       7
       0
```

6.
```
       203
  25) 50.75
      50
       07
        0
        75
        75
         0
```

M.F.M.T.

6⟌78.3

SKILL SHEET

2.1.11 DIVIDE DECIMALS

DD2 DIVIDE A 1-DIGIT WHOLE NUMBER INTO A 2- TO 4-DIGIT NUMBER HAVING 1 OR 2 DECIMAL PLACES

Divide

1. 4) 8.40

2. 7) 84.35

3. 3) 22.77

4. 3) 68.7

5. 6) 52.8

6. 8) 30.72

M.F.M.T.

$6\overline{)783}$

SKILL SHEET

2.1.11 DIVIDE DECIMALS

DD3 DIVIDE A 2-DIGIT WHOLE NUMBER INTO A 2- TO 4-DIGIT NUMBER HAVING 1 OR 2 DECIMAL PLACES

Divide

1. $42\overline{)8.40}$

2. $55\overline{)82.5}$

3. $47\overline{)164.5}$

4. $13\overline{)24.57}$

5. $26\overline{)27.56}$

6. $18\overline{)57.78}$

M.F.M.T.

6|783

SKILL SHEET

2.1.11 DIVIDE DECIMALS

Z1 RECOGNIZE THAT WITH ANY DECIMAL ENDING IN ZERO(S), THE ZERO(S) MAY BE DROPPED

Directions: Choose the number equivalent to the one given.

1. 8.20

A. 82
B. 8.02
C. 820
D. 8.2

2. .010

A. 10
B. .1
C. .01
D. 100

3. 35.60

A. 356
B. 3560
C. 3.56
D. 35.6

4. 1.940

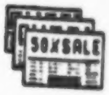
A. 194
B. 1.904
C. 1.94
D. 19.4

5. .70

A. .07
B. .7
C. 7.0
D. 70

6. 8.01

A. 8.001
B. 8.010
C. .8001
D. .801



Find a Percent of a Number (2.1.12)

PD3

1. Rename **7%** as a decimal.

A. .07 C. 7.0
B. .70 D. None of the above

PD3

2. Rename **15%** as a decimal.

A. 1.5 C. 15
B. .15 D. None of the above

PD3

3. Rename **40%** as a decimal.

A. .4 C. 4.0
B. .04 D. None of the above

PD3

4. Rename **65%** as a decimal.

A. 6.5 C. .065
B. .65 D. None of the above

PN1

5. Choose the correct way to get the answer.

25% of 75 = ______

A. 25 X 75 = ______
B. .25 ÷ 75 = ______
C. 2.5 X 75 = ______
D. .25 X 75 = ______

PN1

6. Choose the correct way to get the answer.

9% of 82 = ______

A. .09 ÷ 82 = ______
B. .9 X 82 = ______
C. .09 X 82 = ______
D. 09 X 82 = ______

Find a Percent of a Number (2.1.12), cont.

PN1

7. Choose the correct way to get the answer.

6% of 65 = _____

A. .06 X 65 = _____
B. .60 X 65 = _____
C. .06 ÷ 65 = _____
D. .06 X .65 = _____

PN1

8. Choose the correct way to get the answer.

80% of 580 = _____

A. .80 X 5.80 = _____
B. .80 X 580 = _____
C. .08 X 580 = _____
D. .80 ÷ 580 = _____

PN2

9. Solve

55% of 95 = _____

PN2

10. Solve

75% of 54 = _____

PN2

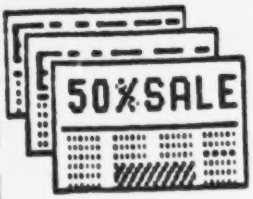
11 .Solve

3% of 39 = _____

PN2

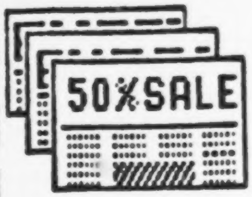
12. Solve

8% of 238 = _____



SKILL SHEET

2.1.12 FIND A PERCENT OF A NUMBER



SKILL SHEET

2.1.12 FIND A PERCENT OF A NUMBER

PD3 RENAME PERCENTS AS DECIMALS

The first step in finding a percent of a number is to change the percent to a decimal.

Write the following percents as decimals.

1. 25% of 85

25% = ______

2. 7% of 29

7% = ______

3. 35% of 120

35% = ______

4. 9% of 40

9% = ______

5. 85% of 90

85% = ______

6. 30% of 350

30% = ______

7. 10% of 298

10% = ______

8. 50% of 400

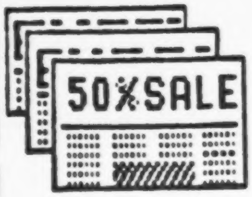
50% = ______

9. 3% of 28

3% = ______

10. 2% of 59

2% = ______



____

____

SKILL SHEET

2.1.12 FIND A PERCENT OF A NUMBER

PN1 TRANSLATE "OF" AS "MULTIPLIED BY"

Directions: Rewrite as a multiplication problem.

Example: 13% of 81 ——> 13% x 81

1. 4% of 25 ——> ______________________________

2. 10% of 67 ——> ______________________________

3. 5% of 92 ——> ______________________________

4. 23% of 54 ——> ______________________________

5. 9% of 90 ——> ______________________________

SKILL SHEET

2.1.12 FIND A PERCENT OF A NUMBER

PN2 FIND A PERCENT OF A NUMBER

Solve these problems.

1. 6% of 24 =

2. 45% of 90 =

3. 10% of 300 =

4. 25% of 75 =

5. 8% of 62 =

MEASUREMENT

PRE-TEST AND POST-TEST

Name________________________________ Date____________________

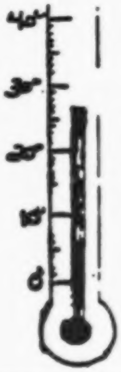
1. Find the temperature of this thermometer to the nearest 10 degree:

A. 20°

B. 25°

C. 27°

D. 30°



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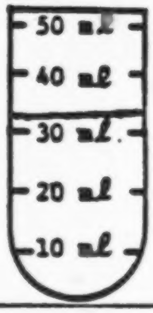
2. Find the volume of liquid in this test tube to the nearest 10 milliliter:

A. 32ml

B. 30ml

C. 35ml

D. 40ml


50 mℓ
40 mℓ
30 mℓ
20 mℓ
10 mℓ

---

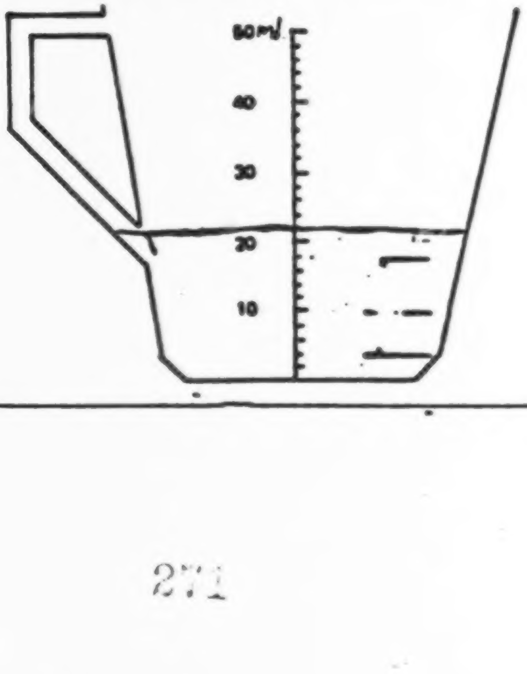
3. Find the volume of the liquid in this cup to the nearest milliliter:

A. 21ml

B. 20ml

C. 22ml

D. 10ml


60 ml
40
30
20
10

MEASUREMENT

PRE-TEST AND POST-TEST

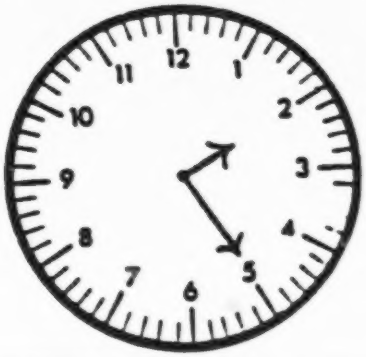
4. Find the time on this clock to the nearest minute:

A. 2:30

B. 5:10

C. 2:25

D. 5:15


12
1
2
3
4
5
6
7
8
9
10
11

---

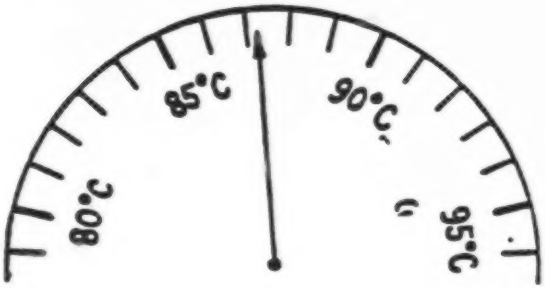
5. Find the temperature of this thermometer to the nearest 1° C:

A. 86°

B. 87°

C. 88°

D. 89°


80°C
85°C
90°C
95°C

---

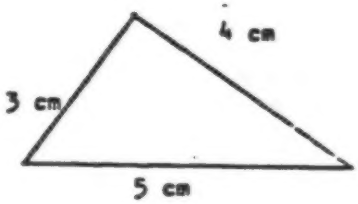
6. Find the perimeter of this figure:

A. 12cm

B. 17cm

C. 60cm

D. 23cm



MEASUREMENT

PRE-TEST AND POST-TEST

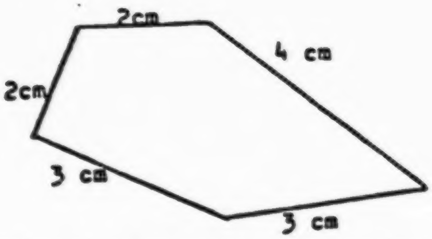
7. Find the perimeter of this figure:

A. 12 cm

B. 14 cm

C. 60 cm

D. 23 cm



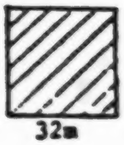
8. Find the area of this square:

A. $64m^2$

B. $128m^2$

C. $138m^2$

D. $1024m^2$



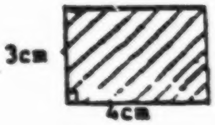
9. Find the area of this rectangle:

A. $12cm^2$

B. $6cm^2$

C. $24cm^2$

D. $9cm^2$



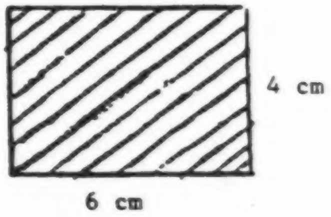
10. Find the area of the rectangle:

A. $12cm^2$

B. $24cm^2$

C. $14cm^2$

D. $36cm^2$



11. The length of a room would best be expressed in:

A. km

B. m^2

C. m

D. cm

MEASUREMENT

PRE-TEST AND POST-TEST

12. The distance from New York to Boston would best be measured in:

    A. km^2

    B. m

    C. km

    D. m^2

---

13. The temperature in a freezer would best be expressed in:

    A. cm

    B. °C

    C. g

    D. mm

---

14. The height of a woman would best be measured in:

    A. cm

    B. ml

    C. mm

    D. mg

---

15. The capacity of a coffee cup would best be measured in:

    A. cm

    B. ml

    C. l

    D. mg

---

16. A bus leaves Milwaukee at 7:15 a.m. and arrives in Chicago at 8:45 a.m. How long does the trip take?

    A. 4 hours

    B. 2 hours

    C. 1 hour and 30 minutes

    D. 2 hours and 30 minutes

MEASUREMENT

PRE-TEST AND POST-TEST

17. Rhonda started jogging at 12:00 noon. She ran until 2:15 p.m. How long did she run?

A. 2 hours and 45 minutes

B. 2 hours and 15 minutes

C. 14 hours and 15 minutes

D. 9 hours and 45 minutes

---

18. On a Sunday Amanda left her apartment at 7:15 a.m. and reached her sister's house at 2:30 p.m. How many hours did it take Amanda to drive to her sister's?

A. 5 hours and 15 minutes

B. 5 hours and 45 minutes

C. 7 hours and 45 minutes

D. 7 hours and 15 minutes

---

19. Mary put a loaf of bread in the oven at 1:32 p.m. The bread baked for 1 hour and 16 minutes. What time did Mary take the bread out of the oven?

A. 3:48 p.m.

B. 2:48 p.m.

C. 12.16 p.m.

D. 2:58 p.m.

---

20. A baseball game lasted for 3 hours and 37 minutes. When the game was over the time was 11:15 p.m. What time did the game start?

A. 8:52 p.m.

B. 7:38 p.m.

C. 7:48 p.m.

D. 2:52 a.m.

Read Scales on Measuring Instruments (2.2.1)

MM1

Match each scale with what it would measure.

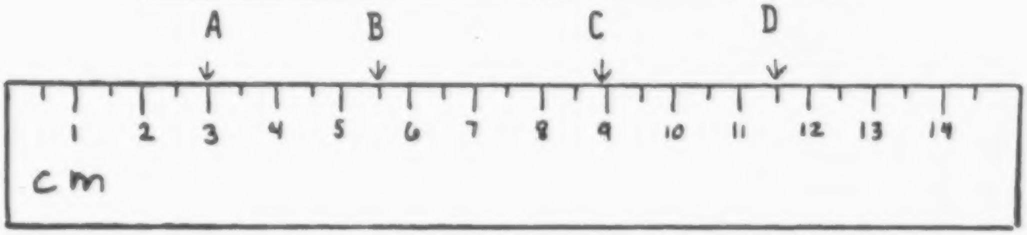
___ 1. meter stick A. capacity

___ 2. thermometer B. length

___ 3. beaker C. temperature

MM2

4. Write the unit that is labeled on each scale.


A
B
C
D
1 2 3 4 5 6 7 8 9 10 11 12 13 14
cm

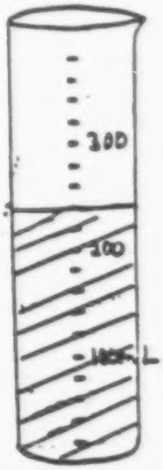
A = _____ cm B = _____ cm C = _____ cm D = _____ cm

MM3

Find each to the nearest unit indicated.

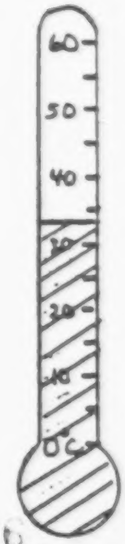
5. Find the capacity to the nearest 100 mL.

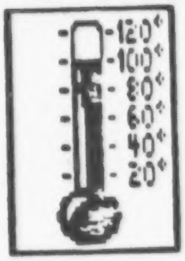
____


300
200
100mL

6. Find the temperature to the nearest 10° C.

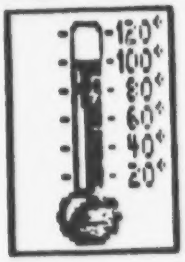
____


60
50
40
30
20
10
0°C


120°
100°
80°
60°
40°
20°

SKILL SHEET

2.2.1 READ SCALES ON MEASURING INSTRUMENTS


120°
100°
80°
60°
40°
20°

____

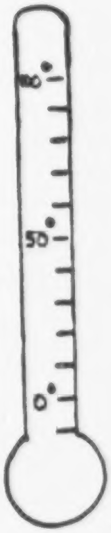
____

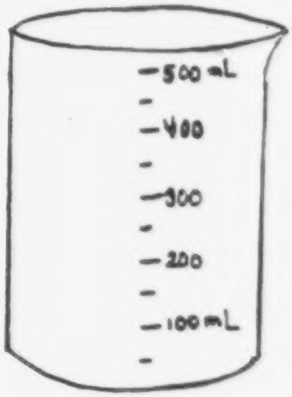
SKILL SHEET

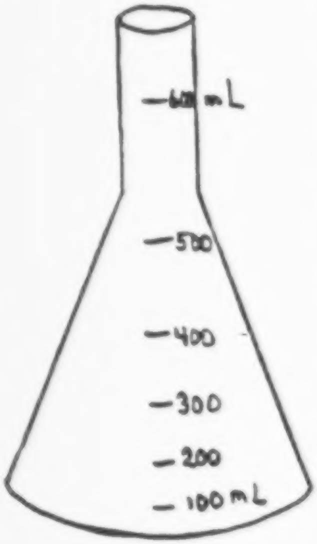
2.2.1 READ SCALES ON MEASURING INSTRUMENTS

MM1 RECOGNIZE LENGTH, TEMPERATURE, AND CAPACITY FROM A SCALE ON A MEASURING INSTRUMENT

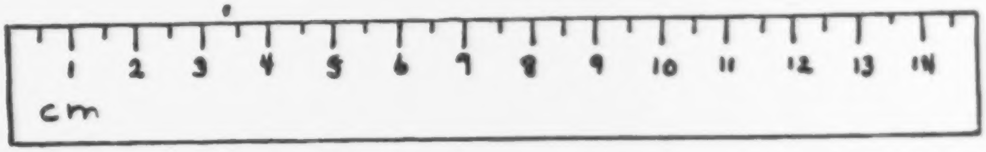
Directions: Indicate whether each scale would measure length, temperature, or capacity.



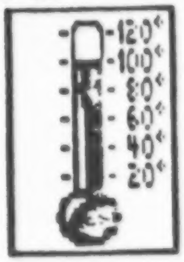

500 mL
400
300
200
100 mL


600 mL
500
400
300
200
100 mL

1. ____________________ 2. ____________________ 3. ____________________


1
2
3
4
5
6
7
8
9
10
11
12
13
14
cm

4. ____________________

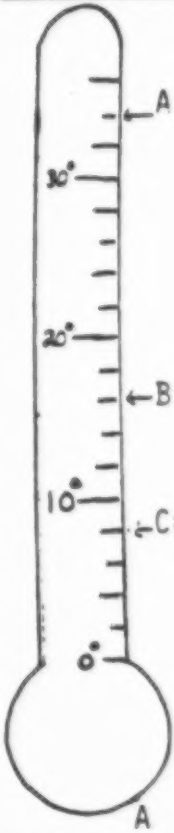

120°
100°
80°
60°
40°
20°

SKILL SHEET

2.2.1 READ SCALES ON MEASURING INSTRUMENTS

MM2 IDENTIFY THE APPROPRIATE UNITS OF MEASURE

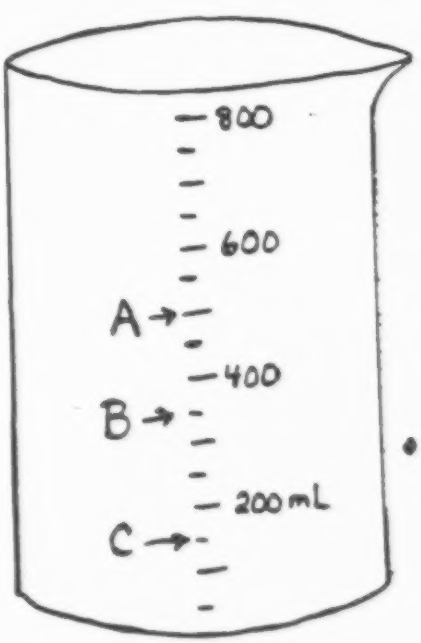
Directions: Write the unit that is labeled on each scale.



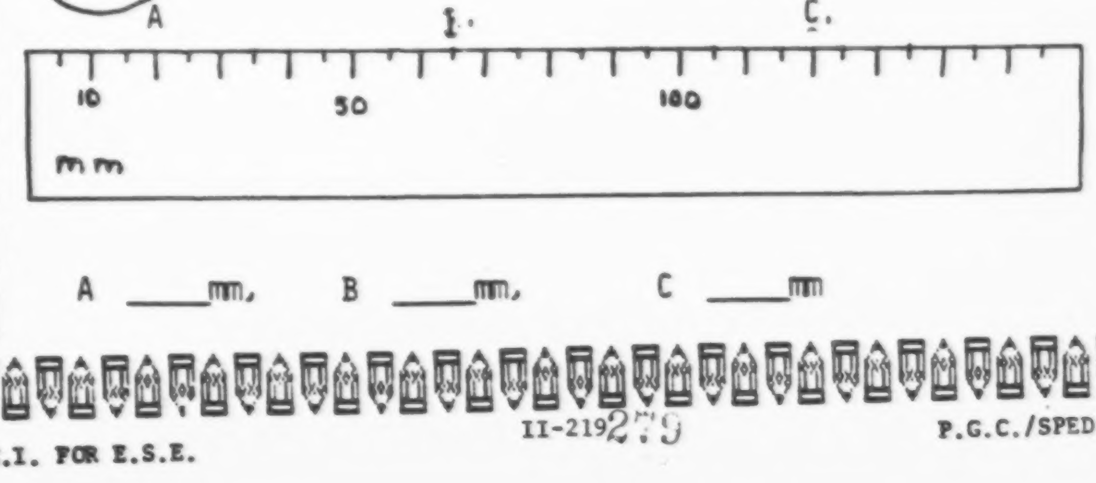
A ____°C

B: ____°C

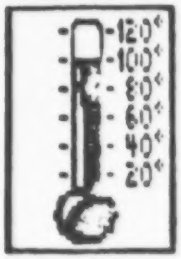
C: ____°C


800
600
A
400
B
200 mL
C

A: ____mL, B: ____mL, C: ____mL


A
B
C
10
50
100
mm

A ____mm, B ____mm, C ____mm


120°
100°
80°
60°
40°
20°

____

____

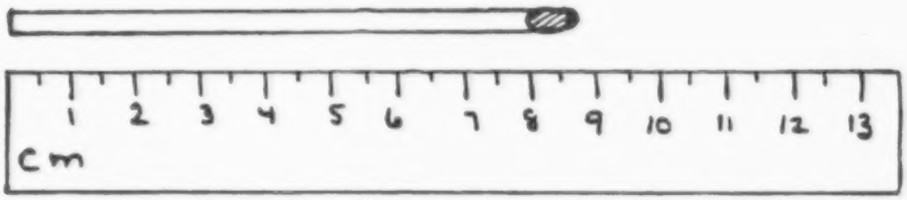
SKILL SHEET

2.2.1 READ SCALES ON MEASURING INSTRUMENTS

MM3 ESTIMATE TO THE NEAREST WHOLE UNIT OF MEASURE

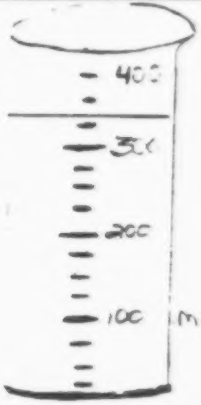
Directions: Find each to the nearest unit.

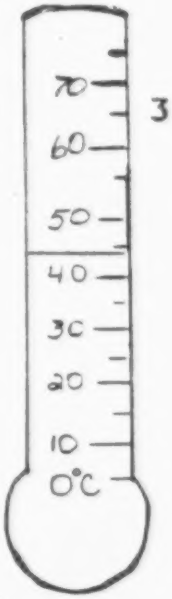
1. Find the length to the nearest cm ______________


1
2
3
4
5
6
7
8
9
10
11
12
13
cm

2. Find the capacity to the nearest 100 mL.

____


400
300
200
100
mL


70
60
50
40
30
20
10
0°C

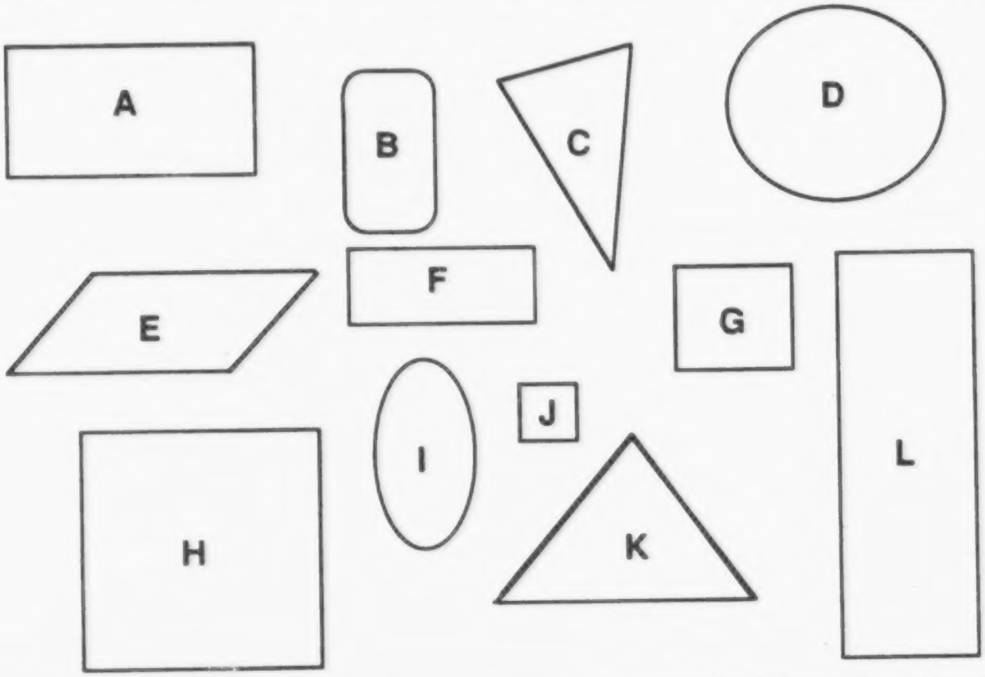
3. Find the temperature to the nearest 10° C.

____

Find Perimeter and Area of Simple Polygons (3.2.1)
Part I

There are three squares in the shapes below. Write the letters of the squares: (1.) _____ (2.) _____ (3.) _____ MPA1

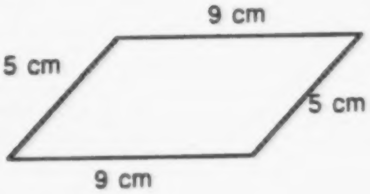
There are three rectangles in the shapes below. Write the letters of the rectangles: (4.) _____ (5.) _____ (6.) _____ MPA2


A
B
C
D
E
F
G
H
I
J
K
L

MPA3

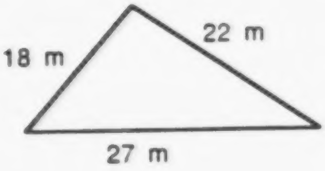
Find the perimeter of each. Use the correct unit.

7.


9 cm
5 cm
5 cm
9 cm

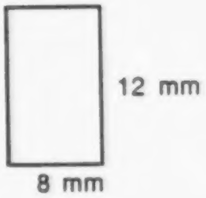
P = _____

8.



P = _____

9.



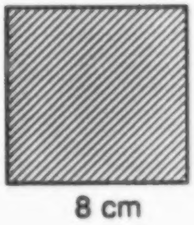
P = _____

Find Perimeter and Area of Simple Polygons (3.2.1)
Part II

MPA4

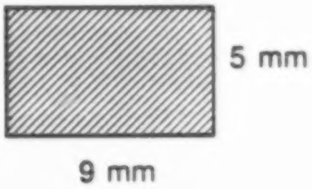
Find the area of each. Use the correct unit.

1.



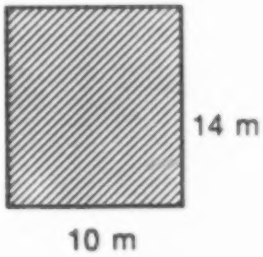
A = ________

2.



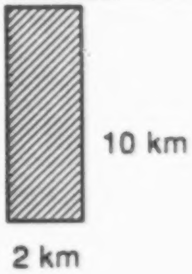
A = ________

3.



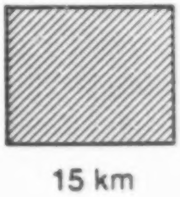
A = ________

4.



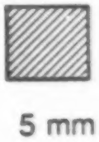
A = ________

5.



A = ________

6.



A = ________

MPA5

Circle the choice that indicates the correct unit to measure the area of each.

7. area of a book cover m cm^2 cm^3 cm^4

8. area of a cafeteria floor m^3 m m^2 km

9. area of the state of Maryland cm m km^4 km^2

10. area of a bottle cap mm^2 mm km mm^3

SKILL SHEET

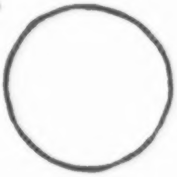
3.2.1 FIND PERIMETER AND AREA OF SIMPLE POLYGONS

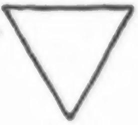
SKILL SHEET

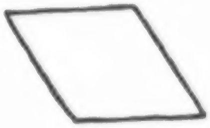
3.2.1 FIND PERIMETER AND AREA OF SIMPLE POLYGONS

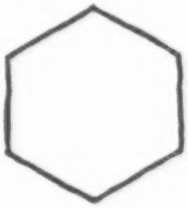
MPA1 IDENTIFY A SQUARE

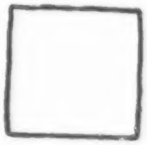
Directions: Circle the letter(s) of shapes that are squares.

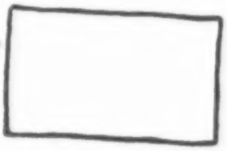
A.


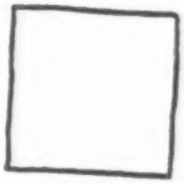
B.


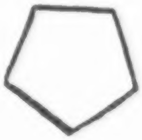
C.


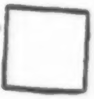
D.


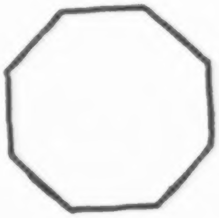
E.


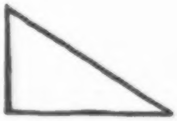
F.


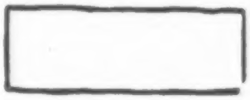
G.


H.


I.


J.


K.


L.


____

____

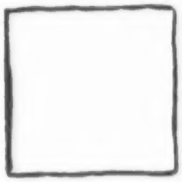
SKILL SHEET

3.2.1 FIND PERIMETER AND AREA OF SIMPLE POLYGONS

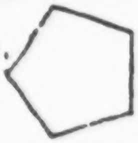
MPA2 IDENTIFY A RECTANGLE

Directions: Circle the letter (s) of shapes that are rectangles.

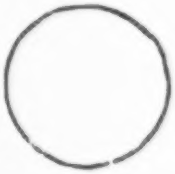
A.



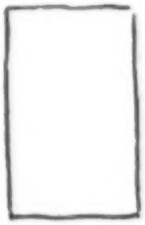
B.



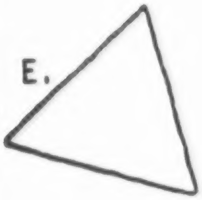
C.



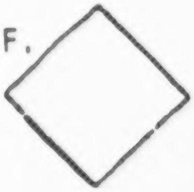
D.



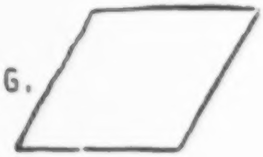
E.



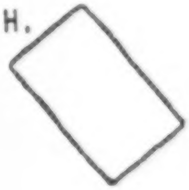
F.



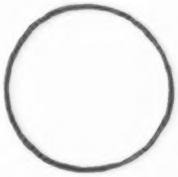
G.



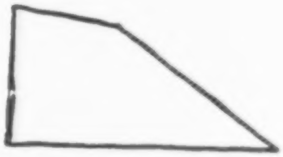
H.



I.



J.



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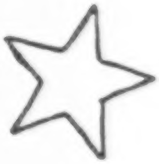

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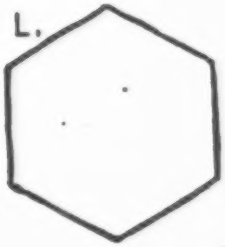

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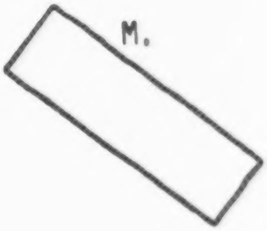

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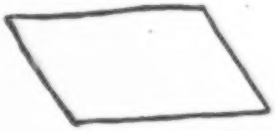

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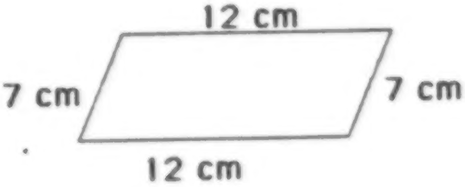
SKILL SHEET

3.2.1 FIND PERIMETER AND AREA OF SIMPLE POLYGONS

MPA3 COMPUTE THE PERIMETER OF VARIOUS POLYGONS

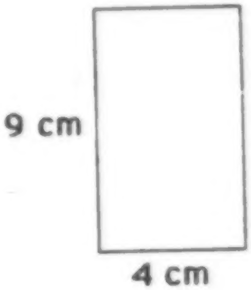
Directions: Compute the perimeter of each.

1.


12 cm
7 cm
7 cm
12 cm

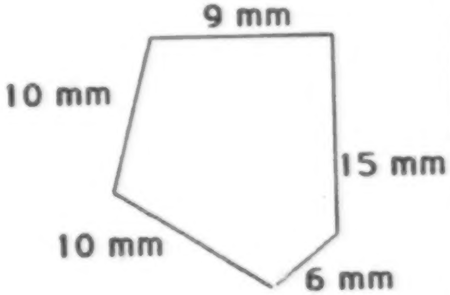
Perimeter = ____________

2.



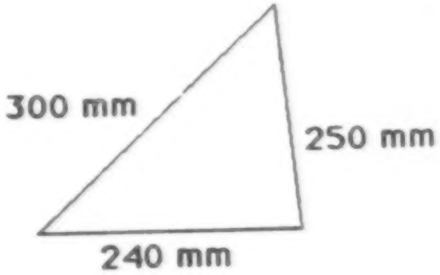
Perimeter = ____________

3.


9 mm
10 mm
15 mm
10 mm
6 mm

Perimeter = ____________

4.


300 mm
250 mm
240 mm

Perimeter = ____________

____

____

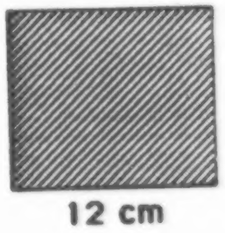
SKILL SHEET

3.2.1 FIND PERIMETER AND AREA OF SIMPLE POLYGONS

MPA4 COMPUTE THE AREAS OF SQUARES AND RECTANGLES

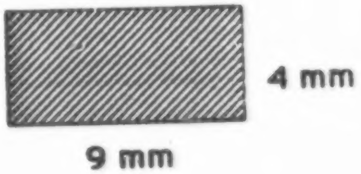
Directions: Compute the area of each.

1.



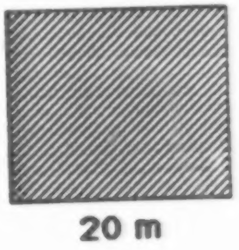
Area = ______________

2.



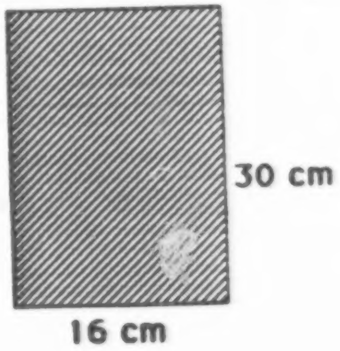
Area = ______________

3.



Area = ______________

4.



Area = ______________

SKILL SHEET

3.2.1 FIND PERIMETER AND AREA OF SIMPLE POLYGONS

MPA5 RECOGNIZE THAT AREA IS ALWAYS EXPRESSED IN SQUARE UNITS WITH AN EXPONENT OF TWO

Directions: Circle the choice that indicates the correct unit to measure the area of each.

1. Area of a parking lot:	m^3	m	m^4	m^2
2. Area of a piece of paper:	cm	cm^2	cm^3	cm^4
3. Area of New York:	km^4	km^2	km	km^3
4. Area of a rectangle:	cm	cm^3	cm^2	cm^4
5. Area of a circle:	mm^2	mm^3	mm^4	mm
6. Area of a gym floor:	m	m^2	m^3	m^4

Choose an Appropriate Unit of Measure (3.2.2)

MAU1

Underline the word or words that indicate what attribute of each thing is being measured.

1. The length of a football field is 120 m.
2. The capacity of a bathtub is 50 L.
3. The volume of a football is less than that of a basketball.

MAU2

Circle the unit that is appropriate to measure each.

4. volume:	kg	C	m^2	cm^3
5. mass:	cm^2	mL	g	cm^3
6. area:	mm^2	mm	kg	L

MAU3

Circle the unit that would best measure each.

7. volume of a basketball:	mm^3	cm^3	m^3	km^3
8. capacity of a car's gas tank:	kg	mL	L	kL
9. heighth of a flag pole:	km	dm	m	mm

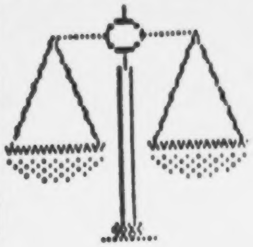
MAU4

Circle the unit that would best measure each.

10. length of your hand:	cm	mm	m	km
11. area of a football field:	mm^2	cm^2	m^2	km^2
12. volume of a hat box:	mm^3	m^3	cm^3	km^3

SKILL SHEET

3.2.2 CHOOSE AN APPROPRIATE UNIT OF MEASURE



SKILL SHEET

3.2.2 CHOOSE AN APPROPRIATE UNIT OF MEASURE

MAU1 IDENTIFY KEY WORDS IN A SENTENCE QUESTION: LINEAR (DISTANCE, HEIGHT), AREA, WEIGHT/MASS, CAPACITY (LIQUID), VOLUME (SOLID), TEMPERATURE (C)

Directions: Underline the word or words that indicate what is being measured in each sentence.

1. The sauna felt great because the temperature was 85°
2. This map states that the distance from New York to Maryland is more than 200 km.
3. My new car has a gasoline tank with a capacity of about 14 L.
4. The mass of a truck is more than that of a car.
5. The air pump increased the volume of the balloon.
6. We were amazed at the length of the train as we waited for it to pass at the railroad crossing.
7. The decorator measured the area of the room so that he would know how much carpet to order.

SKILL SHEET

3.2.2 CHOOSE AN APPROPRIATE UNIT OF MEASURE

MAU2 CHOOSE THE APPROPRIATE TYPE OF UNIT OF MEASURE FOR THE ATTRIBUTE

Directions: Circle the unit that is appropriate to measure each.

1. distance: m m^2 m^3 ml

2. volume: kg C cm^2 cm^3

3. mass: C mm cm^3 g

4. area: L cm kg mm^2

5. temperature: C mm^3 cg l

6. capacity: kg mL m^2 m^3

7. height: mm^2 m L kg

8. length: mm g mm^3 mL

9. weight: m^3 cm kg mL

SKILL SHEET

3.2.2 CHOOSE AN APPROPRIATE UNIT OF MEASURE

MAU3 DETERMINE THE RELATIVE SIZE OF WHAT IS BEING MEASURED

Circle the unit that would be best to measure each.

1. Length of a pencil:	mm	cm	m	km
2. Length of a football field:	cm	m	km	mm
3. Area of a piece of paper:	mm^2	cm^2	m^2	km^2
4. Distance to New York:	cm	mm	km	m
5. Volume of a tea cup:	mm^3	cm^3	m^3	km^3
6. Capacity of a swimming pool:	mL	L	dl	kl
7. Mass of a whale:	mg	g	hg	kg

[illegible]

SKILL SHEET

3.2.2 CHOOSE AN APPROPRIATE UNIT OF MEASURE

MAU4 CHOOSE THE APPROPRIATE MAGNITUDE OF THE UNIT OF MEASURE

Directions: Circle the unit that would be best used to measure each.

1. Length of a pencil:	kg	m	mL	cm
2. Mass of a feather:	C	g	L	km^2
3. Height of a building:	g	cm^2	mL	m
4. Volume of a coffee cup:	ml	cm^2	cm^3	km
5. Area of a classroom:	m^2	cm^3	L	m
6. Height of a flag pole:	m^2	m	cm^2	kg
7. Volume of football:	g	cm^2	mL	cm^3
8. Temperature of an oven:	cm	C	L	kg
9. Capacity of a bathtub:	L	kg	km	cm^2
10. Distance to the moon:	m^2	kg	C	km

Find Elapsed Time (5.1.6)
Part I

MET1

Write each time using a colon and A.M. or P.M.

1. twenty minutes after five in the afternoon ______________
2. ten minutes past twelve o'clock noon ______________
3. fifteen minutes before six in the morning ______________

MET2

How many hours do the following minutes represent?

4. 60 minutes = ______________ 5. 180 minutes = ______________

6. 30 minutes = ______________

MET3

Use the sentences to find each time.
If a time is not listed in the problem, write not listed.

A movie that was 2 hours and 35 minutes long ended at 9:20 P.M.

7. What was the starting time? ______________
8. What was the ending time? ______________
9. What was the elapsed time? ______________

Shelly put a cake in the oven at 3:20 P.M. If the cake takes 40 minutes to bake, what time should she take it out?

10. What was the starting time? ______________
11. What was the ending time? ______________
12. What was the elapsed time? ______________

Find Elapsed Time (5.1.6)
Part II

1. Subtract minutes and hours. MET4

$$\begin{array}{r} 10{:}25 \\ -\ 9{:}10 \\ \hline \end{array}$$

A. 9:35 C. 1:35

B. 35 D. 1:15

2. Subtract minutes and hours. MET4

$$\begin{array}{r} 6{:}40 \\ -\ 2{:}20 \\ \hline \end{array}$$

A. 4:20 C. 8:20

B. 3:20 D. 2:40

3. Subtract minutes and hours. MET4

$$\begin{array}{r} 11{:}49 \\ -\ 6{:}34 \\ \hline \end{array}$$

A. 6:15 C. 4:15

B. 5:21 D. 5:15

4. Subtract minutes and hours. MET5

$$\begin{array}{r} 8{:}10 \\ -\ 7{:}30 \\ \hline \end{array}$$

A. 40 C. 1:80

B. 80 D. 1:40

5. Subtract minutes and hours. MET5

$$\begin{array}{r} 12{:}00 \\ -\ 8{:}58 \\ \hline \end{array}$$

A. 4:52 C. 3:02

B. 4:12 D. 3:52

6. Subtract minutes and hours. MET5

$$\begin{array}{r} 3{:}33 \\ -\ 1{:}45 \\ \hline \end{array}$$

A. 1:88 C. 1:12

B. 1:48 D. 2:12

Find Elapsed Time (5.1.6)
Part III

1. Subtract minutes and hours. MET6

$$\begin{array}{r} 1{:}25 \\ -\ 9{:}10 \\ \hline \end{array}$$

A. 8:15 C. 4:15

B. :35 D. 1:15

2. Subtract minutes and hours. MET6

$$\begin{array}{r} 1{:}40 \\ -\ 2{:}20 \\ \hline \end{array}$$

A. 3:20 C. 13:20

B. 3:60 D. 11:20

3. Subtract minutes and hours. MET6

$$\begin{array}{r} 2{:}49 \\ -\ 6{:}34 \\ \hline \end{array}$$

A. 4:15 C. 8:15

B. 9:23 D. 3:15

4. Add minutes and hours. MET7

$$\begin{array}{r} 8{:}10 \\ +\ 7{:}30 \\ \hline \end{array}$$

A. 15:40 C. 1:20

B. 3:40 D. 1:40

5. Add minutes and hours. MET7

$$\begin{array}{r} 12{:}00 \\ +\ 8{:}58 \\ \hline \end{array}$$

A. 4:58 C. 20:58

B. 4:02 D. 8:58

6. Add minutes and hours. MET7

$$\begin{array}{r} 10{:}33 \\ +\ 11{:}45 \\ \hline \end{array}$$

A. 21:78 C. 1:12

B. 10:18 D. 2:12

Find Elapsed Time (5.1.6)
Part IV

MET8

1. Ben took a 30 minute break from work at 1:35 P.M. When should he return?

MET8

2. Kelly put muffins in the oven at 10:15 A.M. When should she take them out if they must bake for 20 minutes?

MET8

3. The boxing match started at 8:05 P.M. and lasted for three hours and 20 minutes. When did it end?

MET9

4. Fifth period starts at 1:15 P.M. and ends at 2:07 P.M. How long is fifth period?

MET9

5. Joe worked on my car from 9:00 in the morning until 11:45 A.M. How much time did he spend on my car?

MET9

6. Marilyn babysat from 7:30 A.M. until 6:00 P.M. How much time did she babysit?

Find Elapsed Time (5.1.6)
Part IV, cont.

MET10

7. Aunt Karen took a roast out of the oven at 12:00 noon. When did she put it in the oven if it took 2 hours and 15 minutes to cook?

MET10

8. The basketball game ended at 10:30 P.M. and lasted 2 hours and 25 minutes. When did it start?

MET10

9. Pat worked on his car for 1 hour and 20 minutes. When did he start if he finished at 3:05 P.M?

MET11

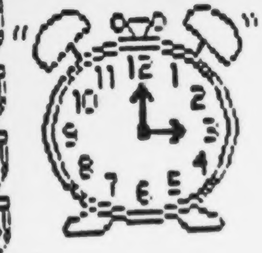
10. A tennis match started at 10:55 A.M. and ended at 1:05 P.M. How long did it last?

MET11

11. Bill put a turkey in the oven at 1:43 P.M. It took 2 hours and 28 minutes to cook. When was it ready?

MET11

12. Francis studied at the library for three and a half hours. When did she start if she left at 4:20 P.M.?



SKILL SHEET

5.1.6 FIND ELAPSED TIME

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SKILL SHEET

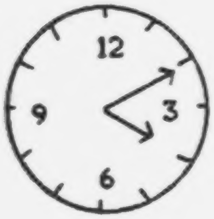
5.1.6 FIND ELAPSED TIME

MET1 IDENTIFY CORRECT TIME BY WRITING HOURS AND MINUTES WITH A COLON

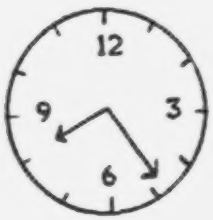
MET2 RECALL THAT 60 MINUTES EQUALS 1 HOUR

Write each time using a colon.

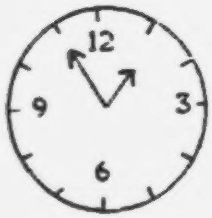
1.



2.



3.



__________ __________ __________

4. 20 minutes after 10 = ________________

5. 30 minutes after midnight = ________________

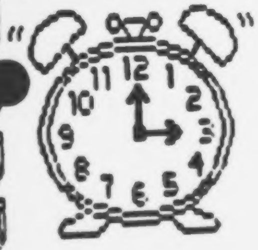
6. 12 noon = ________________

7. 3 hours and 40 minutes = ________________

8. 1 hour and 25 minutes = ________________

9. 60 minutes = ________________

10. 120 minutes = ________________



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SKILL SHEET

5.1.6 FIND ELAPSED TIME

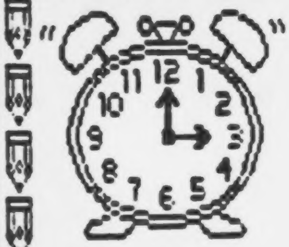
MET3 IDENTIFY START TIME, END TIME, AND/OR ELAPSED TIME IN WORD PROBLEMS

Use the sentence to find each time.
If a specific time is not listed in the problem, write NOT LISTED.

1. A movie began at 6:15 P.M. and ended at 9:05 P.M.
   - a. What was the starting time? ________________
   - b. What was the ending time? ________________
   - c. What was the elapsed time? ________________

2. A bus trip took 2 hours and 25 minutes. The bus arrived at 4:25 P.M.
   - a. What was the starting time? ________________
   - b. What was the ending time? ________________
   - c. What was the elapsed time? ________________

3. A cake went into the oven at 4:55 P.M. It takes 1 hour and 5 minutes to cook.
   - a. What was the starting time? ________________
   - b. What was the ending time? ________________
   - c. What was the elapsed time? ________________



SKILL SHEET

5.1.6 FIND ELAPSED TIME

MET4 SUBTRACT MINUTES AND HOURS FROM MINUTES AND HOURS, NO REGROUPING

Subtract

1. $\begin{array}{r} 11{:}15 \\ -\ 1{:}00 \\ \hline \end{array}$

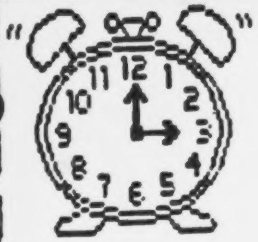
2. $\begin{array}{r} 12{:}45 \\ -\ 9{:}30 \\ \hline \end{array}$

3. $\begin{array}{r} 8{:}35 \\ -\ 2{:}05 \\ \hline \end{array}$

4. $\begin{array}{r} 1{:}30 \\ -\ {:}20 \\ \hline \end{array}$

5. $\begin{array}{r} 3{:}55 \\ -\ 2{:}45 \\ \hline \end{array}$

6. $\begin{array}{r} 9{:}48 \\ -\ 1{:}15 \\ \hline \end{array}$



SKILL SHEET

5.1.6 FIND ELAPSED TIME

MET5 SUBTRACT MINUTES AND HOURS FROM MINUTES AND HOURS WITH REGROUPING

Subtract

Remember you are borrowing an hour which equals ____ minutes.

1. $\begin{array}{r} 4{:}05 \\ -\ 3{:}30 \\ \hline \end{array}$

2. $\begin{array}{r} 10{:}00 \\ -\ \ {:}50 \\ \hline \end{array}$

3. $\begin{array}{r} 7{:}30 \\ -\ 4{:}55 \\ \hline \end{array}$

4. $\begin{array}{r} 8{:}10 \\ -\ {:}35 \\ \hline \end{array}$

5. $\begin{array}{r} 6{:}25 \\ -\ \ {:}40 \\ \hline \end{array}$

6. $\begin{array}{r} 2{:}00 \\ -\ {:}20 \\ \hline \end{array}$

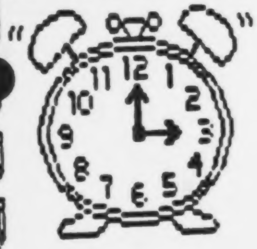
SKILL SHEET

5.1.6 FIND ELAPSED TIME

MET6 WHEN THE MINUEND IS SMALLER THAN THE SUBTRAHEND, ADD 12 HOURS TO THE MINUEND

Subtract

Problem	Step 1	Step 2
Ex. 3:06 - 11:12	3:06 + 12:00 15:06	$\overset{4}{1\cancel{5}}:\overset{6}{\cancel{0}}6$ - 11:12 3:54
1. 1:45 - 4:00		
2. 7:50 - 10:45		
3. 6:30 - 11:08		
4. 2:00 - 3:15		
5. 1:28 - 12:32		



SKILL SHEET

5.1.6 FIND ELAPSED TIME

MET7 WHEN THE ANSWER FOR END TIME IS LARGER THAN 12:59, SUBTRACT 12 HOURS

Change the answers to a regular time by subtracting 12 hours (12:00).

1. $\begin{array}{r} 6{:}05 \\ +\ 11{:}40 \\ \hline 17{:}45 \end{array}$ $\quad$ $\begin{array}{r} 17{:}45 \\ -\ 12{:}00 \\ \hline \end{array}$

2. $\begin{array}{r} 3{:}20 \\ +\ 10{:}00 \\ \hline 13{:}20 \end{array}$

3. $\begin{array}{r} 5{:}05 \\ +\ 9{:}05 \\ \hline 14{:}10 \end{array}$

4. $\begin{array}{r} 7{:}50 \\ +\ 8{:}01 \\ \hline 15{:}51 \end{array}$

Add and change to a regular time.

1. $\begin{array}{r} 10{:}52 \\ +\ 5{:}03 \\ \hline \end{array}$

2. $\begin{array}{r} 8{:}30 \\ +\ 7{:}20 \\ \hline \end{array}$

3. $\begin{array}{r} 6{:}45 \\ +\ 12{:}10 \\ \hline \end{array}$

3. $\begin{array}{r} 12{:}04 \\ +\ 12{:}41 \\ \hline \end{array}$

4. $\begin{array}{r} 11{:}25 \\ +\ 2{:}00 \\ \hline \end{array}$

6. $\begin{array}{r} 9{:}40 \\ +\ 3{:}20 \\ \hline \end{array}$

SKILL SHEET

5.1.6 FIND ELAPSED TIME

MET8 FIND END TIME BY ADDING START TIME AND ELAPSED TIME

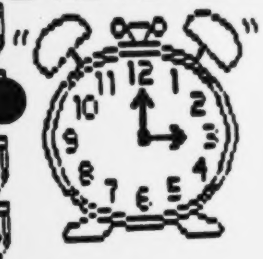
Solve these problems. Show your work.

1. **Al took his car to the repair shop at 1:30 P.M. The repairman said it would take two and a half hours to fix the car. When should Al come back?**

2. **Jackie put a cake in the oven at 2:40 P.M. If the cake takes 40 minutes to bake, when should she take it out of the oven?**

3. **Frank parked his car next to a parking meter at 10:30 A.M. If he put in enough money for 2 hours and 15 minutes, when should he return to his car?**

4. **Sonja went to the mall with her mother at 9:45 A.M. They agreed to meet at Roy Rogers in three and one half hours. At what time will they meet?**



SKILL SHEET

5.1.6 FIND ELAPSED TIME

MET9 FIND ELAPSED TIME BY SUBTRACTING START TIME FROM END TIME

Solve these problems. Show your work.

1. **Joe and Barbara went bowling from 1:15 P.M. to 4:00 P.M. How long did they bowl?**

2. **The Johnsons drove to Philadelphia. They left home at 8:00 A.M. and arrived at 11:30 A.M. How long did the trip take?**

3. **Francis babysat from 10:00 A.M. until 4:30 P.M. How long did she babysit?**

4. **Mrs. King's operation started at 7:30 A.M. and lasted until 10:15 A.M. How long did it last?**

SKILL SHEET

5.1.6 FIND ELAPSED TIME

MET10 FIND START TIME BY SUBTRACTING ELAPSED TIME FROM END TIME

Solve these problems. Show your work.

1. **Jerry finished practicing the piano at 4:30 P.M. When did he start practicing if he practiced for 45 minutes?**

2. **When does class start if it lasts 52 minutes and ends at 11:05 A.M.?**

3. **The baseball game ended at 8:45 P.M. When did it start if it lasted 2 hours and 25 minutes?**

4. **Marge left work at 5:15 P.M. What time did she start working if she worked for 8 hours?**

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SKILL SHEET

5.1.6 FIND ELAPSED TIME

MET11 SELECT THE CORRECT PROCEDURE FOR FINDING START, END, OR ELAPSED TIME

Set up each problem as a vertical addition or subtraction problem
Place the problem in the box. DO NOT SOLVE IT.

1. School started at 9:00 A.M. and ended at 3:00 P.M. How long did it last?

2. A roast takes 1 hour and 45 minutes to cook. If it went into the oven at 2:30 P.M., at what time will it be ready?

3. A movie lasted 2 hours and 25 minutes. It ended at 8:20 P.M. What time did it start?

4. Bill left for work at 8:22 A.M. and arrived home at 11:12 A.M. for lunch. How long was he gone?

USING DATA

PRE-TEST AND POST-TEST

Name______________________________ Date____________________

ELAPSED TIME AND USING TABLES

LIFE INSURANCE PAYMENTS BY AGE

Ages	Monthly Payment
21-23	$4.06
24-26	$4.42
27-29	$4.79
30-32	$5.15
33-35	$5.52

1. What is the monthly life insurance payment for a person 32 years old?

   A. $4.79
   B. $5.15
   C. $4.06
   D. $5.52

DISTANCE IN KILOMETERS

2.

	Frederick	Ocean City	Washington	Boston
Frederick	0	316	300	148
Ocean City	316	0	258	129
Washington	300	258	0	321
Boston	148	129	321	0

What is the distance from Boston to Frederick?

A. 300 km
B. 258 km
C. 129 km
D. 148 km

3.

Yearly Fuel Costs

Cost per gallon

		$1.15	$1.10	$1.05	$1.00	$.95
Miles	38	454	434	414	395	375
per	36	479	458	437	417	396
gallon	34	507	485	463	441	419

You pay $.95 per gallon for fuel. Your car averages 34 miles per gallon. What is your yearly fuel cost?

A. $396
B. $417
C. $441
D. $419

USING DATA

PRE-TEST AND POST-TEST

4.

Table XIV: *Social Security Tax Withholding Table—5.2%*

Weekly Wages		Social Security Tax to be Withheld	Weekly Wages		Social Security Tax to be Withheld
At Least	But Less Than		At Least	But Less Than	
113.95	114.14	5.93	117.41	117.60	6.11
114.14	114.33	5.94	117.60	117.79	6.12
114.33	114.52	5.95	117.79	118.00	6.13
114.52	114.72	5.96	118.00	118.18	6.14
114.72	114.91	5.97	118.18	118.37	6.15
114.91	115.10	5.98	118.37	118.56	6.16,

How much Social Security Tax is withheld on weekly wages of $114.83?

A. $5.95
B. $5.96
C. $5.97
D. $5.98

5.

COST OF CANS AND BASKETS

Use With	Per Case	5-cs. Lots Per Case
Small waste baskets	$17.85	$16.25
Large waste baskets	15.75	14.25
10 gal cans	22.15	19.85
20 to 30 gal cans	18.75	16.85
32 gal trash cans	21.25	19.15

How much would 1 case of 10 gallon cans cost?

A. $22.15
B. $19.85
C. $15.75
D. $18.75

6.

WIDGET MANUFACTURING COMPANY - RECORD OF HOURS WORKED

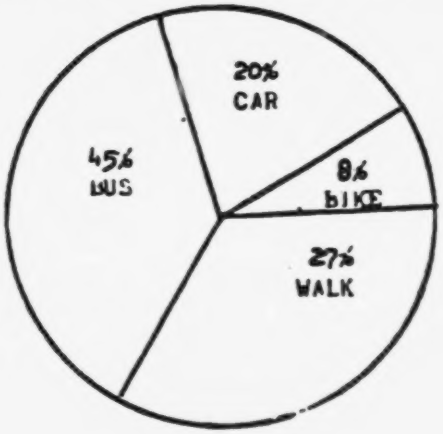
Employee	Monday	Tuesday	Wednesday	Thursday	Friday
Sue	8	8	8	12	6
Gary	6	11	11	12	5
Tom	10	8	6	6	6
Karen	11	5	10	9	8

How many hours did Tom work on Friday?

A. 5
B. 10
C. 8
D. 6

7.

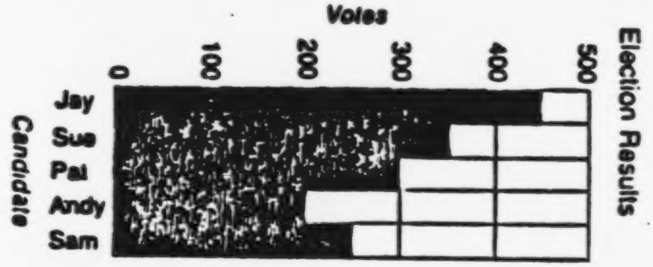
STUDENT TRANSPORTATION TO SCHOOL



What percent of students walk or ride bikes to school?

A. 35%
B. 45%
C. 72%
D. 18%

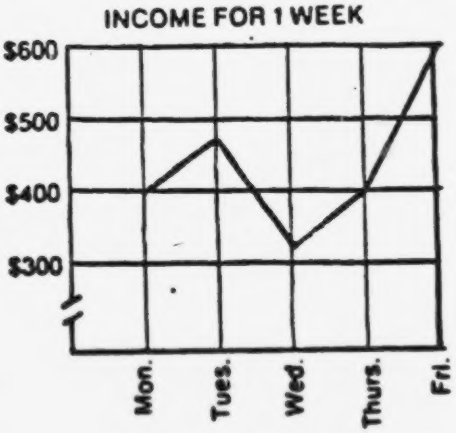
8.



How many votes did Pat have?

A. 350
B. 450
C. 300
D. 250

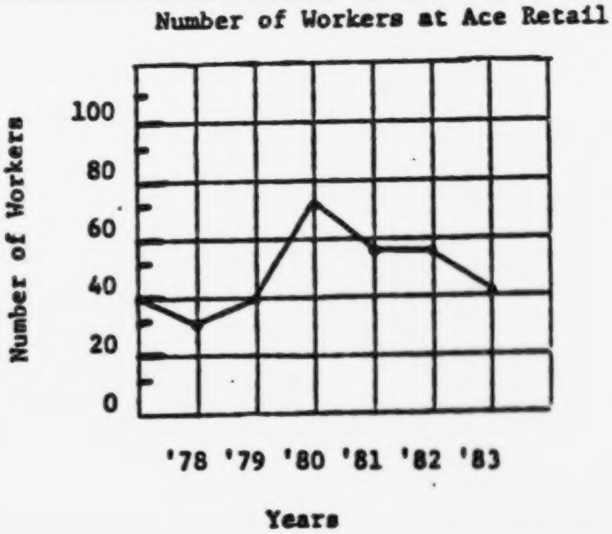
9.



What was the approximate income for Monday and Tuesday?

A. $800
B. $850
C. $900
D. $950

10.



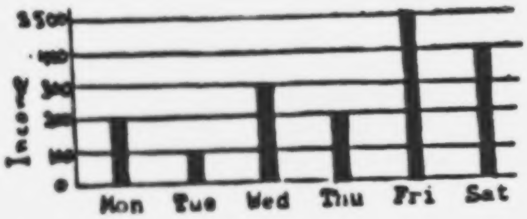
What is the difference between the greatest and least number of workers employed at Ace Retail?

A. 30
B. 40
C. 60
D. 70

USING DATA

PRE-TEST AND POST-TEST

11.

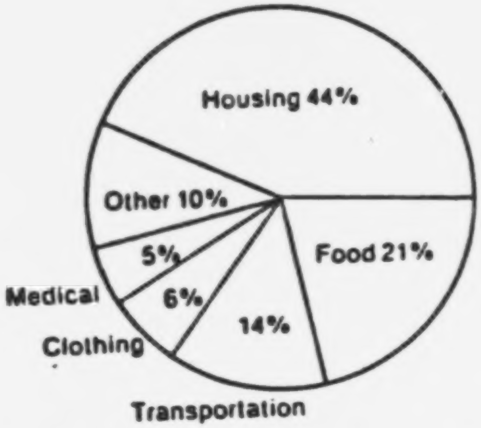


How much greater was the income of Saturday than on Thursday?

A. $100
B. $ 50
C. $200
D. $300

YEARLY WAGE EXPENSES

12.



What is the largest expenditure?

A. Housing
B. Food
C. Clothing
D. Medical

13. Money Collected for Charity

57¢	81¢	27¢

What was the average amount collected for charity?

A. 55¢
B. 41¢
C. $1.65
D. 57¢

---

14. Library Books Lost

1979	54
1980	47
1981	63
1982	52

Find the average number of books lost each year:

A. 162
B. 152
C. 54
D. 52

---

15. Test Scores

1st	82
2nd	91
3rd	94

Find the average test score:

A. 91
B. 267
C. 89
D. 67

---

16. Weekly Car Sales

11
8
14
7

What is the average number of cars sold in a week?

A. 40
B. 11
C. 10
D. 8

17. NUMBER OF VIDEO TAPES RENTED

Monday	36
Tuesday	63
Wednesday	47
Thursday	42

Find the average number of video tapes rented per day.

A. 49 tapes
B. 188 tapes
C. 192 tapes
D. 47 tapes

---

18. Golf Scores

81
76
86

Find the average golf score:

A. 243
B. 61
C. 81
D. 233

---

19. Algebra Scores

68	79	44	89

Find Rose's Algebra average:

A. 72
B. 70
C. 68
D. 66

---

20. Scores

21
10
16
18
10

What is Gerry's average score in basketball?

A. 75
B. 15
C. 60
D. 62

Use Information from Tables (2.3.1)

PACKAGE SHIPPING SERVICE

Any fraction of a pound over the weight shown takes the next higher rate.

Weight not to exceed	ZONE			
	1	2	3	4
1 lb	1.21	1.24	1.30	1.35
2 lb	1.34	1.41	1.49	1.60
3 lb	1.46	1.56	1.68	1.85
4 lb	1.58	1.72	1.87	2.09
5 lb	1.69	1.87	2.06	2.35
6 lb	1.82	2.02	2.27	2.60

UT1

1. How many zones does the package shipping service cover? _______

2. Packages can be shipped if their weight does not exceed _______ lbs.

3. What happens if the weight of a package is just a fraction above the pound(s) shown on the chart? ______________________________

Circle the key words or phrases in these questions.

KQ1

4. How much more does it cost to ship a 2 lb. package to zone 2 than to ship it to zone 1?

5. What is the total cost of shipping a 3 lb. package to zone 4 and a 4 lb. package to zone 2?

6. If Marty sent a 5 lb. package to Joe, and it cost $1.87 to send it, in which zone does Joe live?

Use Information from Tables (2.3.1), cont.

Complete the sentences below using the table.

UT2

7. Each column lists the costs of shipping different packages to four different __________ .

8. The _________ and __________ of the package determine how much it will cost to ship it.

9. Even if a package is a ____________ of a pound over the weight shown, it will cost the next higher __________ .

UT3

10. It costs $______ to ship a 2 lb. package to zone 3.

11. It costs $2.09 to ship a 4 lb. package to zone _____ .

12. $2.02 is the cost of shipping a _____ lb. package to zone _____ .

B	I	N	G	O
1	17	31	49	61
3	18	36	51	63
5	21	X	55	70
10	22	42	57	71
11	30	43	58	73

____

____

SKILL SHEET

2.3.1 USE INFORMATION FROM TABLES

B	I	N	G	O
1	17	31	49	61
3	18	36	51	63
5	21	X	55	70
10	22	42	57	71
11	30	43	58	73

____

____

SKILL SHEET

2.3.1 USE INFORMATION FROM TABLES

UT1 IDENTIFY INFORMATION ON A TABLE

Directions: Use the information in the table below to answer the questions.

SILVER PRICES (Dollars per Ounce)

Year	High	Low	Average
1970	$37.73	$12.80	$31.89
1969	$30.37	$21.37	$26.52
1968	$7.24	$6.24	$7.00
1967	$6.32	$4.60	$5.70
1966	$5.39	$2.85	$4.04

1. What is the title of the table? ______________________________

2. How are silver prices reported? ______________________________

3. Silver prices are listed for what years? ______________________________

4. The highest "high" price is ______________________________

5. The lowest "high" price is ______________________________

6. The lowest "average" price is ______________________________

B I N G O
1 17 31 49 61
3 18 36 51 63
5 21 X 55 70
10 22 42 57 71
11 30 43 58 73

SKILL SHEET

2.3.1 USE INFORMATION FROM TABLES

KQ 1 **SELECT KEY WORDS AND PHRASES IN A QUESTION**

Circle the words and phrases in the following questions that will help you find the answer.

FUND RAISER

	Mon.	Tues.	Wed.	Thurs.	Fri.
Freshmen	$128	$450	$590	$150	$175
Sophmore	$400	$225	$300	$200	$125
Junior	$330	$868	$200	$225	$90
Senior	$600	$150	$250	$330	$60

1. How much money was collected on Wednesday by the freshman class?

2. Which class collected $150 on Tuesday?

THE DAILY TIMES
TOTAL PAPERS DELIVERED

	M	T	W	Th	F
John	58	57	60	59	56
Terry	80	79	81	80	80
Luke	63	65	62	64	61
George	43	41	43	42	42
Total	244	242	246	245	239

3. What was the total number of papers delivered on Thursday?

4. Who delivered more papers on Friday--Luke or John?

KQ 1 **SELECT KEY WORDS AND PHRASES IN A QUESTION, cont.**

Circle the words and phrases in the following questions that will help you find the answer.

BASKETBALL RECORD

	Baskets Made			
Games	Frank	Bruce	Larry	James
Jan. 3	25	18	5	6
Jan. 5	20	10	8	10
Jan. 10	22	15	6	7
Jan. 12	19	14	7	9

5. How many baskets did James make in the second game of the season?

6. Who made six baskets at the game on January 10th?

SALES TAX

	Purchase			
Amount	MD.	Va.	Del.*	Penn.
$1.00	0.05	0.05	—	0.06
$1.25	0.06	0.06	—	0.08
$1.50	0.08	0.08	—	0.09

*Deleware does not have a sales tax.

7. How much sales tax is added to a $1.25 purchase in Maryland?

8. For what purchase amount must you pay 9¢ of sales tax in Pennsylvania?

B	I	N	G	O
1	17	31	49	61
3	18	36	51	63
5	21	✕	55	70
10	22	42	57	71
11	30	43	58	73

SKILL SHEET

2.3.1 USE INFORMATION FROM TABLES

UT2 LOCATE KEY WORDS AND PHRASES ON A TABLE

AIR SHIP CORPORATION

Any fraction of a pound over the weight shown takes the next higher rate.

Weight not to exceed	ZONE 1	ZONE 2	ZONE 3	ZONE 4
1 lb	—	1.97	2.19	3.44
2 lb	2.75	2.81	3.23	4.42
3 lb	3.54	3.64	4.27	5.39
4 lb	4.33	4.48	5.31	6.37
5 lb	5.13	5.30	6.35	7.38
6 lb	5.93	6.14	7.40	8.33

1. What are the costs for shipping packages to Zone 4? Circle them on the table.
2. What does it cost to ship 3 pound packages to any Zone? Underline them on the graph.
3. The lowest price for shipping a 2 pound package is ________.
4. The highest price for shipping a 6 pound package is ________.
5. The highest price in Zone 2 is ________

B I N G O
1 17 31 49 61
3 18 36 51 63
5 21 55 70
10 22 42 57 71
11 30 43 58 73

SKILL SHEET

2.3.1 USE INFORMATION FROM TABLES

UT3 FIND THE POINT AT WHICH THE KEY ROW AND COLUMN INTERSECT TO LOCATE DATA ON A TABLE

BASEBALL RUNS

Teams	Monday	Tuesday	Wednesday	Thursday	Friday
Phillies	4	7	10	8	2
Red Sox	5	5	2	7	5
Yankees	6	1	10	11	12
White Sox	12	12	6	9	6

1. How many runs did the White Sox score on Wednesday?

A. 12
B. 2
C. 10
D. 6

2. How many runs did the Red Sox score on Thursday?

A. 6
B. 12
C. 10
D. 7

3. How many runs did the Phillies score on Monday?

A. 5
B. 4
C. 6
D. 12

B	I	N	G	O
1	17	31	49	61
3	18	36	51	63
5	21	X	55	70
10	22	42	57	71
11	30	43	58	73

WIDGET MANUFACTURING COMPANY
RECORD OF HOURS WORKED

Employee	Monday	Tuesday	Wednesday	Thursday	Friday
Nancy	6	12	10	8	11
John	5	11	8	11	9
Sue	11	11	11	7	7
Cindy	12	10	7	5	8

4. How many hours did John work on Tuesday?

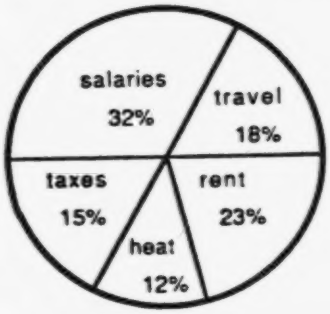
A. 12
B. 7
C. 11
D. 6

5. How many hours did Cindy work on Friday?

A. 11
B. 8
C. 7
D. 9

Use Information from Graphs (2.3.2)

THE BOLT COMPANY'S EXPENSES



Use the circle graph to answer the questions.

UG1

1. On which of the following expenses did the company spend the most?
   - A. rent
   - C. salaries
   - B. heat
   - D. travel

UG2

2. Which of the following expenses is the second largest expense?
   - A. rent
   - C. salaries
   - B. heat
   - D. travel

UG1

3. Was more spent on taxes or heat? __________

KQ1

Circle the key words in the following problems.

4. How much more was spent on travel than taxes?

5. How much was spent all together on salaries, travel, and rent?

KQ2

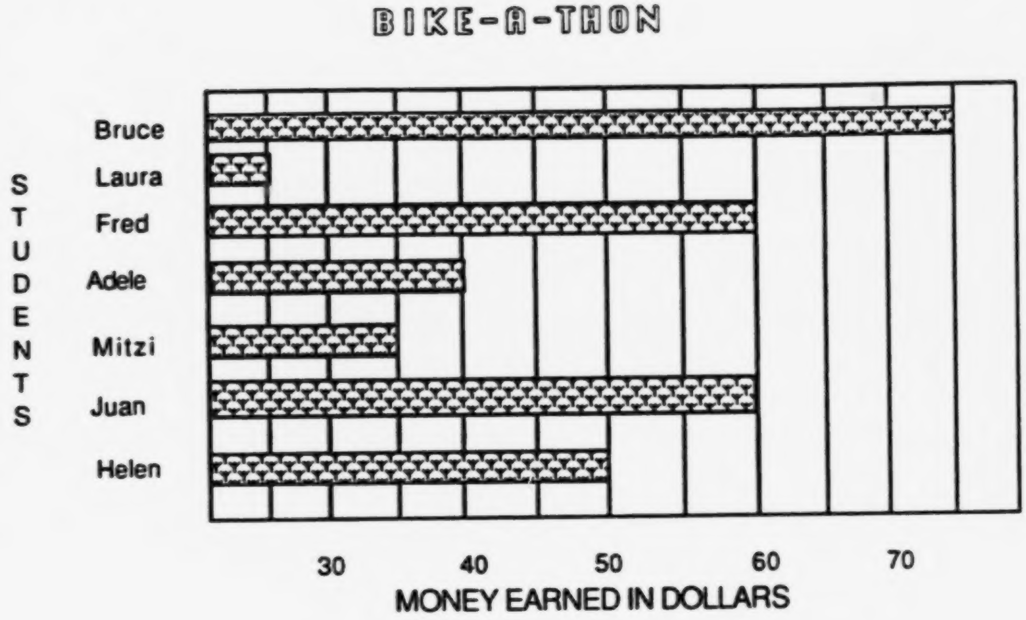
6. Circle the correct operation for problem #4.
   - A. add
   - B. subtract
   - C. multiply
   - D. divide

7. Circle the correct operation for problem #5.
   - A. add
   - B. subtract
   - C. multiply
   - D. divide

UG5

8. How much was spent on heat and rent? __________

Use Information from Graphs (2.3.2), cont.



Use the graph to answer the questions.

UG2

9. What does the information on the x-axis (horizontal line) represent? ______________

10. Which student earned the least in the BIKE-A-THON? ______________

11. What is the greatest amount of money that was earned? ______________

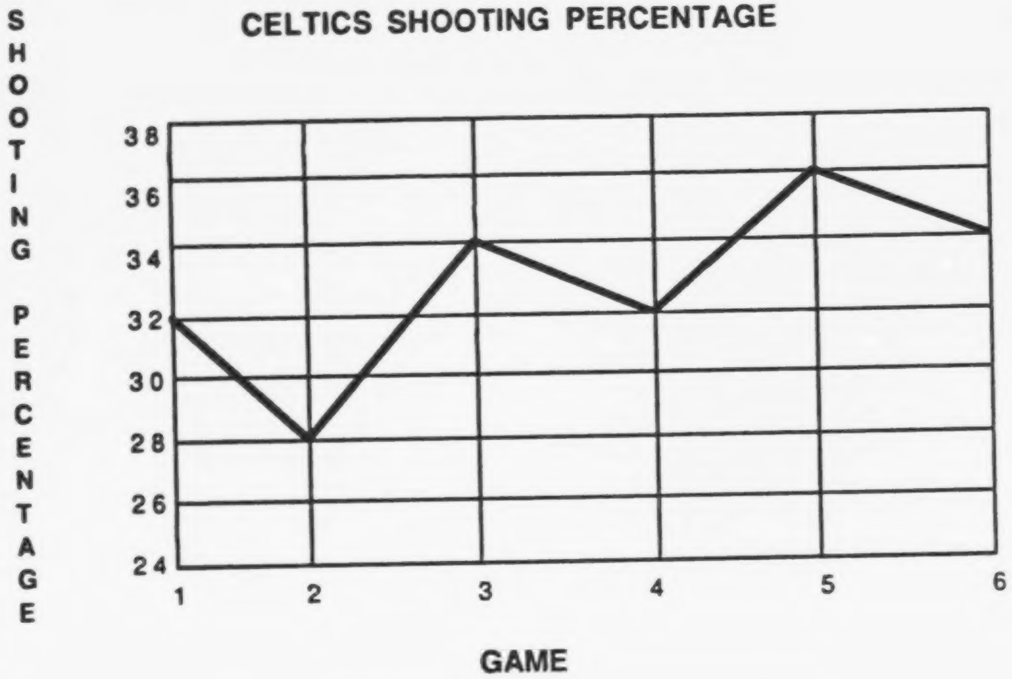
UG4

12. What is the interval between the vertical lines? ______________

UG5

13. How much more did Juan earn than Mitzi? ______________

Use Information from Graphs (2.3.2), cont.



Use the graph to answer the questions.

14. How many games does this graph cover? ______________ UG3

15. Which game had the worst percentage? ______________ UG3

16. What is the interval between the horizontal lines? __________ UG4

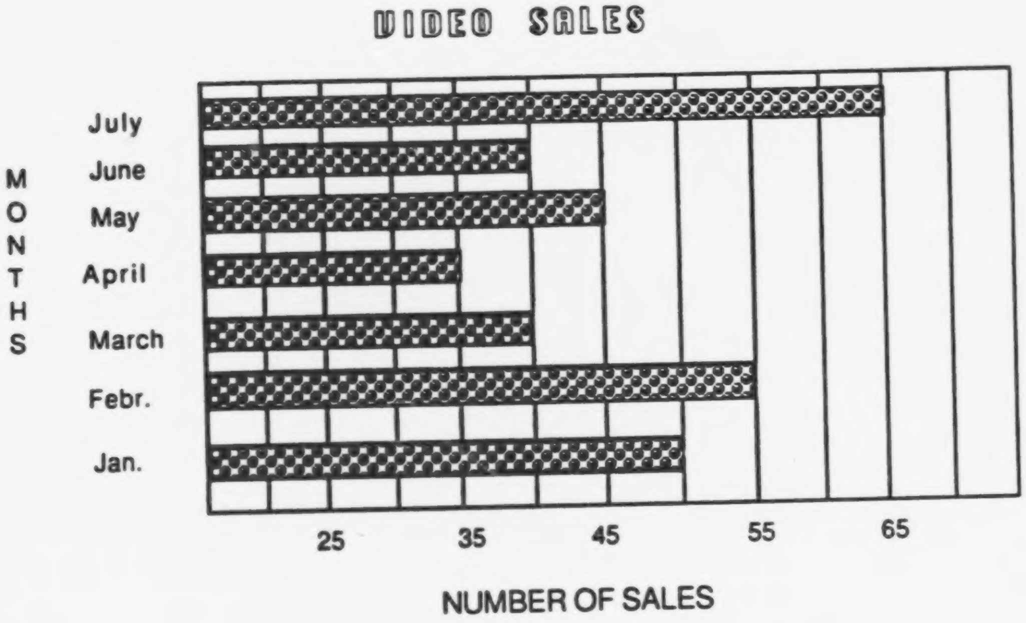
Circle the words that tell how problem #17 should be solved.

17. What is the difference between the shooting percentage in games 3 and 4? KQ1

18. What must you do to solve the problem stated in question 17? KQ2
   A. add
   B. subtract
   C. multiply
   D. divide

19. What is the difference between the highest and lowest shooting percentage? ______________ UG5

Use Information from Graphs (2.3.2), cont.



Use the graph to answer the questions.

20. How many more videos were sold in Febr. than March? _____ UG5

21. What is the total number of videos sold in May, June and July? UG5

____

22. What is the difference between April and March sales? UG5

____

23. What is the interval between each vertical line on the graph above? UG4
A. 5
B. 15
C. 20
D. 25

24. How many recorders were sold in: UG2
Febr.? ______
March? ______
April? ______
June? ______

SKILL SHEET

2.3.2 USE INFORMATION FROM GRAPHS

____

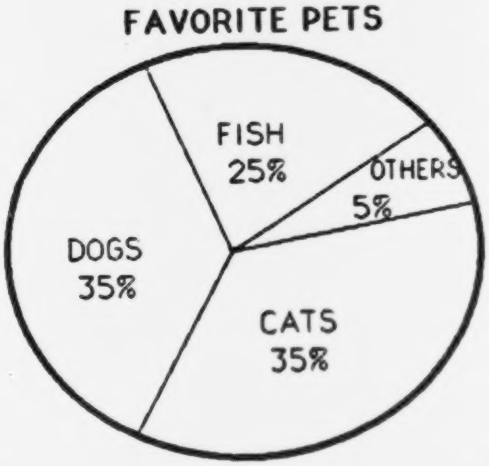
____

SKILL SHEET

2.3.2 USE INFORMATION FROM GRAPHS

UG1 IDENTIFY INFORMATION ON A CIRCLE GRAPH

Use the circle graph to answer the questions below.



1. What is the title of the graph? ______________________
2. What percent (%) of people have fish for pets? ______________
3. According to the graph, what could you say about the people who have dogs and cats for pets?
   A. 35% of the people have dogs and cats for pets
   B. An equal number of people have dogs and cats for pets
   C. Dogs are better pets than cats.
   D. Cats are better pets than dogs.
4. What percent (%) of people have other animals for pets? ________
5. According to the graph, what are some other pets people might have?
   A. Snakes
   B. Birds
   C. Horses
   D. The graph doesn't say

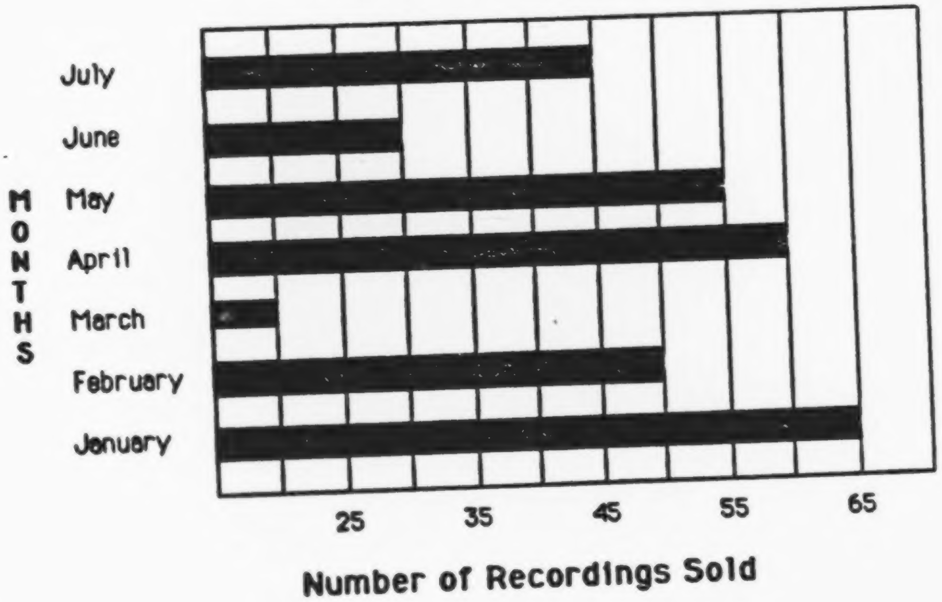
____

____

SKILL SHEET

2.3.2 USE INFORMATION FROM GRAPHS

UG2 IDENTIFY INFORMATION ON A BAR GRAPH



Video Recorder Sales

1. What is the title of this bar graph? ______________________________

____

2. What information is given on the y-axis (vertical line)?

____

3. What information is given on the x-axis (horizontal line)?

____

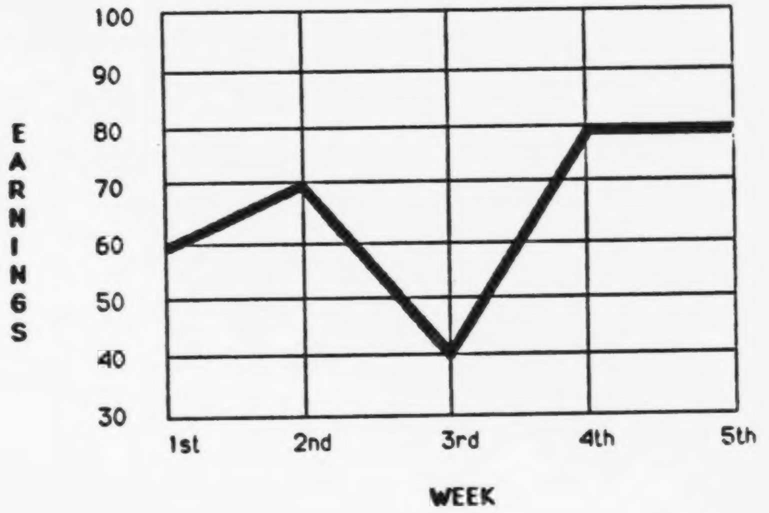
4. How many months are shown on the chart? ______________________________

5. What is the highest number of recorders sold? ______________________________

SKILL SHEET

2.3.2 USE INFORMATION FROM GRAPHS

UG3 IDENTIFY INFORMATION ON A LINE GRAPH



WENDY'S SUMMER EARNINGS

1. What is the title of the graph? ______________________________

____

2. The graph shows Wendy's ____________ for each ____________.

3. How many weeks did Wendy work? ____________

4. How many times did Wendy's earnings **decrease** from one week to the next? ____________

5. How many times did Wendy's earnings **increase** from one week to the next? ____________

SKILL SHEET

2.3.2 USE INFORMATION FROM GRAPHS

KQ1 SELECT KEY WORDS AND PHRASES IN A QUESTION

Circle the key words in the following problems.

1. Who has the greatest number of points on the graph? The least number?
2. What is the total number of points earned by all the students?
3. What is the difference between Alan's and Michael's scores?
4. Who has one half as many points as Moses?
5. What is the difference between Carol's and Moses' scores?

____

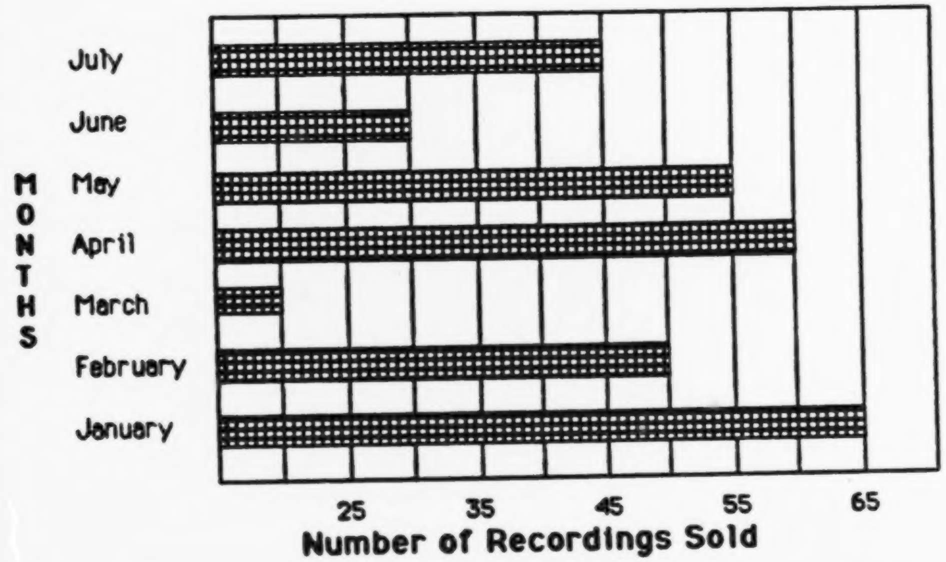
____

SKILL SHEET

2.3.2 USE INFORMATION FROM GRAPHS

KQ 2 **DETERMINE THE CORRECT MATHEMATICAL OPERATION BASED ON KEY WORDS AND PHRASES**

Video Recorder Sales



Write add, subtract, multiply, or divide to tell how you would find the following.

1. total sales for May and June? ________________________________
2. the difference between February and March sales? ________________
3. how many more were sold in April than in June? __________________
4. January, February and March sales combined? ____________________
5. one-half of February sales? _______________________________
6. three times as many sales as March? __________________________

____

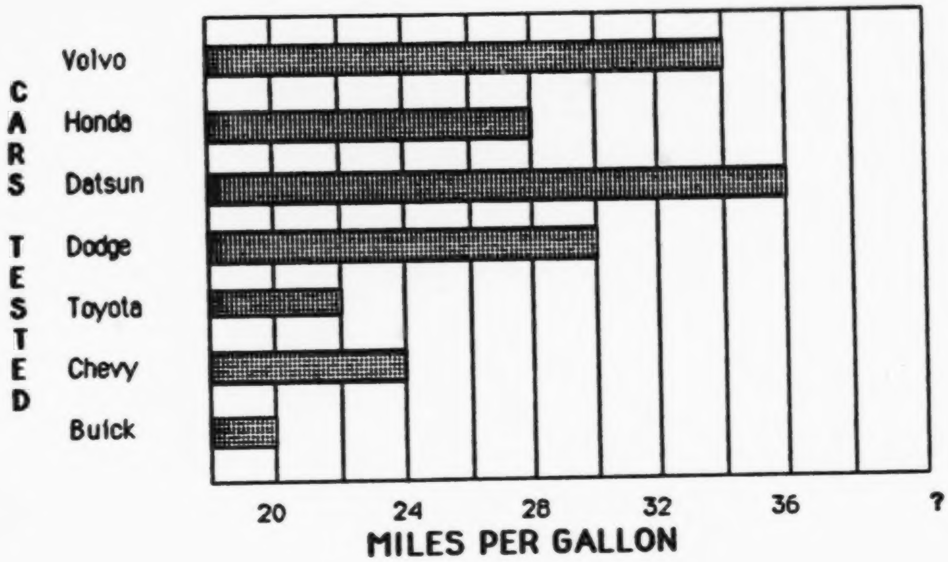
____

SKILL SHEET

2.3.2 USE INFORMATION FROM GRAPHS

UG4 IDENTIFY INTERVALS ON HORIZONTAL OR VERTICAL SCALES

GAS MILEAGE COMPARISONS

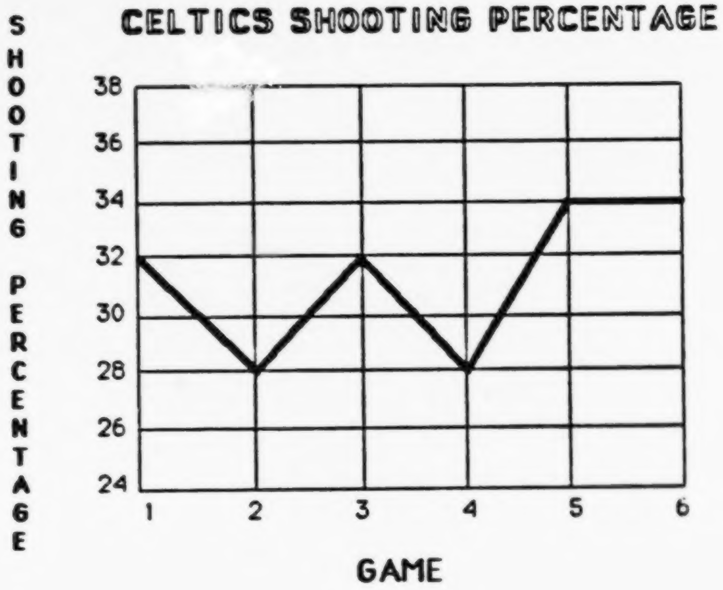


1. Each bar shows the gas mileage for a particular ____________.
2. The miles listed on the graph are ______, ______, ______, ______, ______, and ______.
3. The number of miles shown by the line that is halfway between 20 and 24 is ____________
4. Halfway between 28 and 32 is ____________
5. What number should replace the question mark (?) above? ______.
6. The interval between vertical lines is ____________.

SKILL SHEET

2.3.2 USE INFORMATION FROM GRAPHS

UG4 IDENTIFY INTERVALS ON HORIZONTAL OR VERTICAL SCALES



1. The graph shows the shooting percentage for the Celtics in each of six ______________.
2. The percentages (%) listed on the graph are 24, 26, __________, 30, __________, __________, 36, __________.
3. The distance from 24% to 26% is __________ %.
4. If you wanted to write the number halfway between 34% and 36%, you would write __________ %.

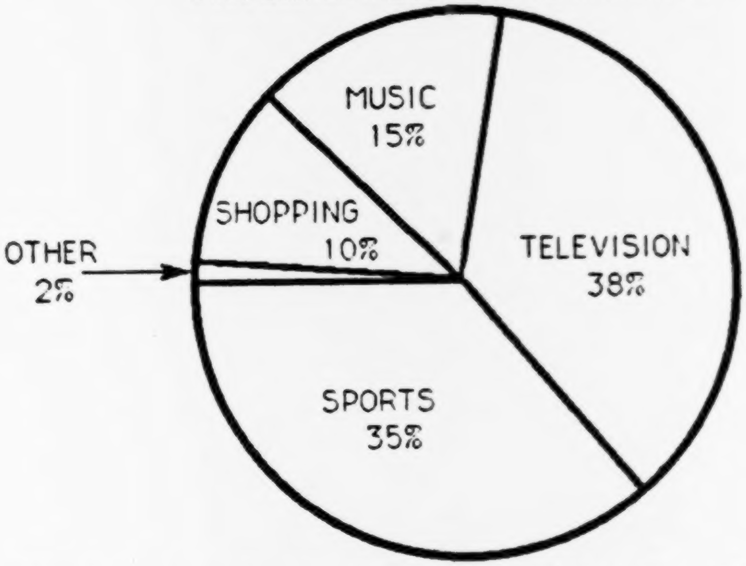
SKILL SHEET

2.3.2 USE INFORMATION FROM GRAPHS

UG5 PERFORM ONE CALCULATION USING INFORMATION FROM A GRAPH

Use the circle graph to answer the questions below.

FAVORITE LEISURE ACTIVITIES



1. **What percentage of students like to watch television or listen to music?**

2. **What percentage of students prefer to do something else besides play sports?**

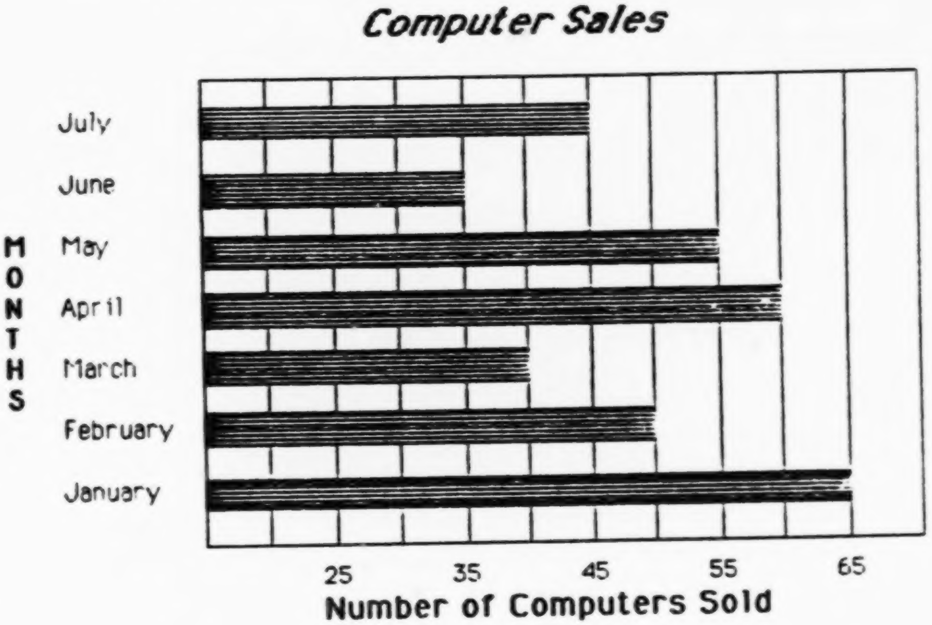
3. **How much more do students prefer watching television than going shopping?**

4. **What percentage of students like to listen to music or do other things?**

SKILL SHEET

2.3.2 USE INFORMATION FROM GRAPHS

UG5 PERFORM ONE CALCULATION USING INFORMATION FROM A GRAPH



1. How many computers were sold in the first two months of the year?

2. What is the difference between the best and worst month for computer sales?

3. What is the total number of computers sold in the three months with the best sales?

4. What is the difference between sales in April and March?

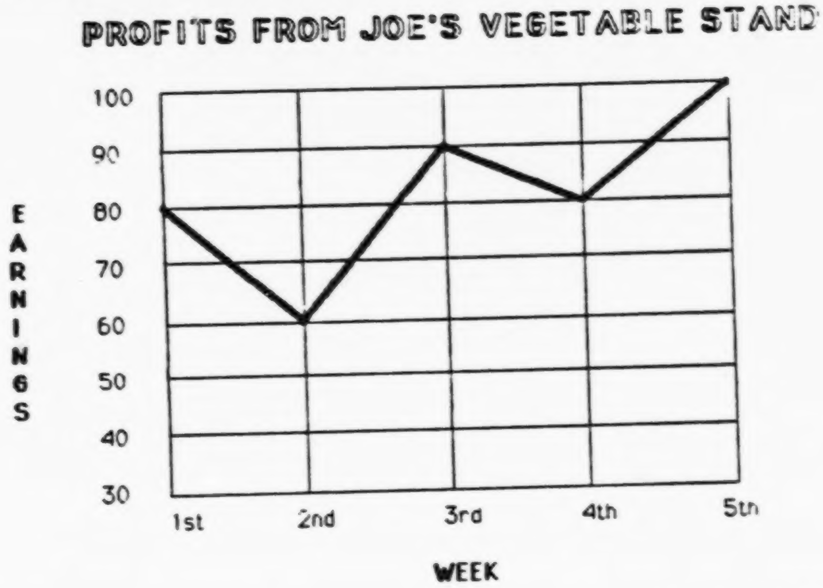
____

____

SKILL SHEET

2.3.2 USE INFORMATION FROM GRAPHS

UG5 PERFORM ONE CALCULATION USING INFORMATION FROM A GRAPH



1. What is the difference between the first week and the second week in profits for Joe?

2. How much did Joe earn in the last two weeks?

3. What is the difference between the highest week and the lowest week?

4. How much did Joe earn in all five weeks?

Find the Average of a Set of Numbers (5.1.1)

AV2

Line up the following numbers in a column.

(1.) 18, 84, 10, 20	(2.) 26, 25, 82, 4, 13	(3.) 6, 18, 43, 21

Choose the correct operation to complete the sentence.
(add, subtract, multiply, divide)

AV1

4. To find the average of a set of numbers, you must first ____________ them to get a sum.

5. The next step is to ____________ this sum by the number of items added in step one.

---

6. Find the average. AV3

Bev's Scores on Five Math Tests

Test	*Score*
1	40%
2	75%
3	70%
4	80%
5	95%

Average = _______

7. What is the average number of tickets sold? AV3

Play Tickets Sold

Student	Number
Sam	25
Jo	10
Ted	20
Ann	5
Sue	15

Average = _______

28 22
25 19 6
30

SKILL SHEET

5.1.1 FIND THE AVERAGE OF A SET OF NUMBERS

____

____

28 22
25 19 6
30

SKILL SHEET

5.1.1 FIND THE AVERAGE OF A SET OF NUMBERS

AV1 RECOGNIZE THE PHRASE "FIND THE AVERAGE"....

1. Finding the average requires addition and ________________________.

2. Before you divide in averaging, you need to ________________________ all the numbers.

MATHEMATICS CLASS SIZE

Period 1	32
Period 2	29
Period 3	23
Period 4	33
Period 5	33

Use chart to answer the questions.

Find the average class size.

3. What do you do first? ________________

4. List the numbers you would use. ________________________

____

5. After addition, what is the next step in finding the average? ________________

28 22
25 19 6
30

SKILL SHEET

5.1.1 FIND THE AVERAGE OF A SET OF NUMBERS

AV2 LINE UP NUMBERS IN A COLUMN

Line up the following groups of numbers in column form for addition.

1. 87, 37, 47, 5, 11

2. 12, 6, 25, 43, 16

3. 2, 42, 54, 65, 7

4. 95, 50, 22, 9, 3

5. 48, 33, 14, 75, 80

6. 9, 12, 33, 56, 8

28 22
25 19 6
30

SKILL SHEET

5.1.1 FIND THE AVERAGE OF A SET OF NUMBERS

AV3 FIND THE AVERAGE OF A SET OF NUMBERS

Find the average.

STUDENT ABSENCES

Monday	20
Tuesday	26
Wednesday	10
Thursday	45
Friday	19

1. Find the average number of students absent.

A. 24 students
B. 22 students
C. 120 students
D. 125 students

DISTANCE DRIVEN

Monday	43
Tuesday	53
Wednesday	59
Thursday	71
Friday	94

2. Find the average distance driven.
A. 66 kilometers
B. 54 kilometers
C. 320 kilometers
D. 64 kilometers

NUMBER OF BUS PASSENGERS

Tuesday	98
Wednesday	84
Thursday	61
Friday	93

3. Find the average number of passengers riding the bus

A. 81 passengers
B. 84 passengers
C. 336 passengers
D. 86 passengers

PROBLEM SOLVING
PRE-TEST AND POST-TEST

Name______________________________ Date____________________

1. Solve for N

$N = a(\$3.00) + s(\$2.00)$

$a = 36$
$b = 51$

A. $210.00
B. $87.00
C. $5.00
D. $225.00

---

2. Solve for p

$p = s - c$

$s = \$73$
$c = \$48$

A. $121
B. $111
C. $35
D. $25

---

3. Solve for B

$B = n(f + s)$

$n = 6$
$f = 24$
$s = 27$

A. 306
B. 57
C. 171
D. 3,888

PROBLEM SOLVING

PRE-TEST AND POST-TEST

4. Solve for R

$R = \frac{d}{t}$

$d = 215$
$t = 5$

A. 220
B. 210
C. 1075
D. 43

---

5. You went shopping at White Marsh Mall last weekend to spend some money you got for your birthday. You bought 3 hard rock albums for $7.76 each and a cassette case that cost $11.49. About how much did you spend on your total purchase?

A. $32
B. $33
C. $20
D. $35

---

6. If Sally earns $2.90 each evening by delivering newspapers, about how much would she earn in 10 days?

A. $13
B. $3
C. $30
D. $300

PRE-TEST AND POST-TEST

16. A furniture salesman is paid a commission of 12%. How much will he make for selling a chair that cost $276?

    A. $33.12
    B. $23.00
    C. $12.00
    D. $ 3.31

---

17. A shoe salesman earns 15% commission. What is his commission if he sells $245 worth of shoes?

    A. $230.00
    B. $15.00
    C. $36.75
    D. $24.50

---

18. 55% of the senior class attended the class trip. If there are 200 seniors altogether, how many went on the trip?

    A. 110
    B. 100
    C. 4
    D. 45

---

19. A record album costs $7.90. What would the change be from a ten-dollar bill?

    A. 3 dollars, 1 nickel
    B. 3 dollars, 1 dime
    C. 2 dollars, 1 nickel
    D. 2 dollars, 1 dime

---

20. A sub costs $2.85. What would the change be from a $5.00 bill?

    A. 2 dollars, 1 dime, 1 nickel
    B. 2 dollars, 1 nickel
    C. 3 dollars, 1 dime, 1 nickel
    D. 3 dollars, 1 nickel

Use a Simple Formula (2.1.14)
Part I

UF1

Circle the formulas.

1. $A + B$ $\quad B - Y$ $\quad AX$ $\quad D = RT$ $\quad \frac{A}{B}$

2. $D = \frac{M}{V}$ $\quad M + 1$ $\quad \frac{1}{C}$ $\quad 1M$ $\quad A$

3. XY $\quad \frac{2}{3}$ $\quad X$ $\quad A = (LW)(3M)$

4. $100X$ $\quad \frac{2}{W}$ $\quad V = LWH$ $\quad X - Y$

5. $S = \frac{W - 10E}{5}$ $\quad VCD$ $\quad 1 + 1$ $\quad \frac{8}{C}$

UF2

**Rewrite the formulas substituting numbers for the variables.
Do not solve.**

6. $B = L + W - Z$

$L = 10$
$W = 2$
$Z = 8$

$B =$ ____________________

7. $H = \frac{3 + K}{M} + 15$

$K = 5$
$M = 2$

$H =$ ____________________

8. $J = K + L + M$

$K = 4$
$L = 6$
$M = 8$

$J =$ ____________________

9. $A = \frac{1}{2} BH$

$B = 7$
$H = 12$

$A =$ ____________________

Use a Simple Formula (2.1.14)
Part II

UF3

1. Solve for D

$D = RT$

$R = 6$
$T = 2$

$D =$ ______

2. Solve for x

$x = yz$

$y = 4$
$z = 7$

$x =$ ______

3. Solve for A

$A = BC$

$B = 9$
$C = 3$

$A =$ ______

UF4

4. Solve for D

$D = \frac{M}{V}$

$M = 14$
$V = 2$

$D =$ ______

5. Solve for F

$F = \frac{G}{3}$

$G = 12$

$F =$ ______

6. Solve for A

$A = \frac{B}{C}$

$B = 10$
$C = 5$

$A =$ ______

UF5

7. Solve for L

$L = 16 + (A + B)$

$A = 7$
$B = 4$

$L =$ ______

8. Solve for H

$H = 6 + (J - K)$

$J = 5$
$K = 2$

$H =$ ______

9. Solve for S

$S = (6 - R) + U$

$R = 2$
$U = 3$

$S =$ ______

Use a Simple Formula (2.1.14)
Part III

UF6

1. Solve for B

$B = N + F - S$

$N = 6$
$F = 27$
$S = 24$

$B =$ ________

UF6

2. Solve for D

$D = AB + C$

$A = 4$
$B = 5$
$C = 2$

$D =$ ________

UF6

3. Solve for W

$W = X - YZ$

$X = 50$
$Y = 7$
$Z = 5$

$W =$ ________

UF7

4. Solve for A

$$A = \frac{C + D}{B}$$

$B = 2$
$C = 1$
$D = 3$

$A =$ ________

UF7

5. Solve for G

$$G = \frac{2H + L}{J}$$

$H = 20$
$L = 5$
$J = 5$

$G =$ ________

UF7

6. Solve for K

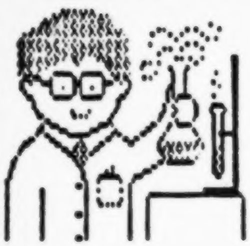
$$K = \frac{L - M}{P}$$

$L = 8$
$M = 2$
$P = 6$

$K =$ ________

SKILL SHEET

2.1.14 USE A SIMPLE FORMULA



____

____

SKILL SHEET

2.1.14 USE A SIMPLE FORMULA

UF1 IDENTIFY A FORMULA

FIND THE FORMULA

1. $D = RT$

$R = 6$
$T = 2$

The formula is ______________

FIND THE FORMULA

2. $C = A + B$

$A = 6$
$B = 2$

The formula is ______________

FIND THE FORMULA

3. $$M = \frac{S}{V}$$

$S = 10$
$V = 5$

The formula is ______________

FIND THE FORMULA

4. $M = 3(V + W)$

$V = 6$
$W = 1$

The formula is ______________

FIND THE FORMULA

5. $$A = \frac{C - D}{B}$$

$B = 2$
$C = 20$
$D = 10$

The formula is ______________

____

____

SKILL SHEET

2.1.14 USE A SIMPLE FORMULA

UF2 SUBSTITUTE NUMBERS FOR THE VARIABLES IN THE FORMULA

1. Solve for C:

$C = A + B$

$A = 2$
$B = 1$

C = ______________________

2. Solve for E:

$E = C - D$

$C = 7$
$D = 5$

E = ______________________

3. Solve for T:

$T = I + H - J$

$I = 13$
$H = 10$
$J = 5$

T = ______________________

UF2 SUBSTITUTE NUMBERS FOR THE VARIABLES IN THE FORMULA, cont.

4. Solve for B:

$B = (C - D) + M$

$C = 8$
$D = 2$
$M = 10$

B =

5. Solve for M:

$$M = \frac{(Y + Z)}{R}$$

$Y = 9$
$Z = 13$
$R = 11$

M =

6. SOLVE FOR L:

$$L = \frac{F}{J - K}$$

$F = 50$
$J = 33$
$K = 8$

L =

SKILL SHEET

2.1.14 USE A SIMPLE FORMULA

UF3 INTERPRET "BH" TO MEAN "B TIMES H"

1. Solve for D:

D = RT

R = 6
T = 2

D =

2. Solve for D:

D = MS

M = 5
S = 10

D =

3. Solve for P:

P = MV

M = 9
V = 2

P =

UF3 INTERPRET "BH" TO MEAN "B TIMES H", cont.

4. Solve for S:

S = WX

W = 5
X = 5

S =

5. Solve for A:

A = LW

L = 6
W = 3

A =

6. Solve for P:

P = 4S

S = 3

P =

SKILL SHEET

2.1.14 USE A SIMPLE FORMULA

UF4 INTERPRET "D/2" TO MEAN D DIVIDED BY 2

1. Solve for D:

$D = \frac{M}{V}$

$M = 10$
$V = 5$

D =

2. Solve for M:

$M = \frac{S}{V}$

$S = 50$
$V = 10$

M =

3. Solve for S:

$S = \frac{N}{T}$

$N = 36$
$T = 9$

S =

4. Solve for P:

$P = \frac{M}{V}$

$M = 6$
$V = 3$

P =

5. Solve for B:

$B = \frac{D}{C}$

$D = 7$
$C = 2$

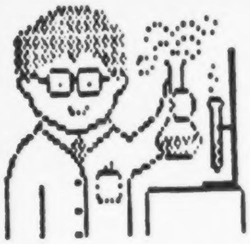
B =

6. Solve for R:

$R = \frac{S}{5}$

$S = 15$

R =



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SKILL SHEET

2.1.14 USE A SIMPLE FORMULA

UF5 COMPUTE ACCORDING TO THE ORDER OF OPERATIONS (PARENTHESES)

Solve each equation one step at a time.

1. Solve for M:

$M = 4(C + D)$ M = ______________________

$C = 6$ M = ______________________

$D = 8$ M = ______________________

2. Solve for P:

$P = 2 + (LW)$ P = ______________________

$L = 10$ P = ______________________

$W = 8$ P = ______________________

3. Solve for M:

$M = 3(V + S)$ M = ______________________

$V = 15$ M = ______________________

$S = 10$ M = ______________________

UF5 COMPUTE ACCORDING TO THE ORDER OF OPERATIONS (PARENTHESES), cont.

4. Solve for W:

$W = (M - N)G$ W = ________________

$M = 3$ W = ________________

$N = 3$ W = ________________

$G = 4$ W = ________________

---

5. Solve for R:

$R = 15 - (M + N + 5)$ R = ________________

$M = 2$ R = ________________

$N = 4$ R = ________________

---

6. Solve for P:

$P = \left(\frac{A}{B} + 1\right) + \frac{20}{C}$ P = ________________

$A = 16$ P = ________________

$B = 4$ P = ________________

$C = 5$ P = ________________

SKILL SHEET

2.1.14 USE A SIMPLE FORMULA

UF6 COMPUTE ACCORDING TO THE ORDER OF OPERATIONS (MULTIPLY, DIVIDE, ADD, AND SUBTRACT)

Solve each equation one step at a time.

---

1. Solve for B:

$B = NF + S$ B = ________

$N = 16$ B = ________

$F = 10$ B = ________

$S = 15$ B = ________

---

2. Solve for A:

$A = \frac{C}{B} + 5 + D$ A = ________

$B = 2$ A = ________

$C = 24$ A = ________

$D = 3$ A = ________

UF6 COMPUTE ACCORDING TO THE ORDER OF OPERATIONS (MULTIPLY, DIVIDE, ADD, AND SUBTRACT), cont.

---

3. Solve for M:

$M = 100 - P - \frac{N}{7}$

$P = 8$

$N = 14$

M = ____________________

M = ____________________

M = ____________________

M = ____________________

---

4. Solve for K:

$K = M + 2N + R$

$N = 3$

$R = 10$

$M = 30$

K = ____________________

K = ____________________

K = ____________________

K = ____________________

____

____

SKILL SHEET

2.1.14 USE A SIMPLE FORMULA

UF7 COMPUTE ACCORDING TO THE ORDER OF OPERATIONS (FRACTIONS)

Solve each equation one step at a time.

1. Solve for S:

$$S = \frac{P + 11}{4}$$

P = 34

S = ______________

S = ______________

S = ______________

S = ______________

---

2. Solve for A:

$$A = \frac{C + S}{B}$$

B = 5 A = ______________

C = 15 A = ______________

S = 10 A = ______________

---

3. Solve for T:

$$T = \frac{4V}{CW}$$

T = ______________

C = 4 T = ______________

V = 4 T = ______________

W = 8 T = ______________

UF7 COMPUTE ACCORDING TO THE ORDER OF OPERATIONS (FRACTIONS)

4. Solve for L:

$$L = \frac{N + Q}{M + 1}$$

L = ____________________

$M = 8$ L = ____________________

$N = 18$ L = ____________________

$Q = 19$ L = ____________________

---

5. Solve for W:

$$W = \frac{Y + Z}{X}$$

W = ____________________

$X = 2$ W = ____________________

$Y = 1$ W = ____________________

$Z = 3$ W = ____________________

---

6. Solve for N:

$$N = \frac{S + 1}{P} + \frac{R + 1}{10}$$

N = ____________________

$S = 29$ N = ____________________

$P = 5$ N = ____________________

$R = 99$ N = ____________________

Choose a Reasonable Answer (4.1.1)
Part I

KW1
KW2

Circle the key words in the problems and then tell which operation to perform.

1. Bea bought a dress for $22.98. A blouse for $16.89 and a handkerchief for $0.89. About how much did these items cost?

2. Which must you do in #1?
A. add
B. subtract
C. multiply
D. divide

3. Kristen wants roller skates that cost $26.96. She has $18.40. About how much more money does she need?

4. Which must you do in #3?
A. add
B. subtract
C. multiply
D. divide

5. Ms. Carlson's class is earning money for a class trip. The trip will cost $518 per person. About how much will they need if there are 21 students in the class?

6. Which must you do in #5?
A. add
B. subtract
C. multiply
D. divide

RA1

Round these numbers to the **nearest** tens, hundreds, and thousands.

Number	Tens	Hundreds	Thousands
7. **2,648**			
8. **514**			
9. **27**			
10. **102**			

Choose a Reasonable Answer (4.1.1)
Part II

RA2

Solve the following problems.

1. Steve bought a fishing pole for $39.78 and three fishing lures at $1.89 each. About how much did he spend?

   A. $40.00
   B. $42.00
   C. $44.00
   D. $46.00

2. Richard spent $42.53 for a software program. He also bought other small parts for his computer that came to $14.38. About how much did he spend?

   A. $48.00
   B. $50.00
   C. $57.00
   D. $60.00

3. Nancy bought three frozen dinners at $2.98 each. About how much did she spend on the food?

   A. $7.00
   B. $8.00
   C. $10.00
   D. $9.00

4. Nicole babysat for her neighbor for 7 hours. About how much will she earn if she gets paid $3.75 an hour?

   A. $28.00
   B. $21.00
   C. $14.00
   D. $20.00

SKILL SHEET

4.1.1 CHOOSE A REASONABLE ANSWER FOR A MATHEMATICAL PROBLEM

SKILL SHEET

4.1.1 CHOOSE A REASONABLE ANSWER FOR A MATHEMATICAL PROBLEM

KW1 SELECT KEY WORDS IN A WORD PROBLEM

Circle the key words in the following problems.

1. John bought 5 bags of grain at $6.95 per bag. About how much did he spend?
2. The Browns are collecting stamps. Amy has 105, John has 248, and Karen has 392. About how many stamps do they have in all?
3. The Ace Apple Orchard sold 49 bushels of apples at $4.75 a bushel and 22 jars of apple butter at $1.10 per jar. About how much money did they collect?
4. The price of silver dropped from $37.97 an ounce to $24.68 in one day. About how much less was it worth?
5. The bill for dinner was $8.30. About how much change should Uncle Jake get from a twenty dollar bill?

SKILL SHEET

4.1.1 CHOOSE A REASONABLE ANSWER FOR A MATHEMATICAL PROBLEM

KW2 SELECT AN OPERATION ACCORDING TO KEY WORDS AND PHRASES

Choose the correct operation.

1. How much less

A. Add
B. Subtract
C. Multiply
D. Divide
E. Round off

2. Total

A. Add
B. Subtract
C. Multiply
D. Divide
E. Round off

3. About

A. Add
B. Subtract
C. Multiply
D. Divide
E. Round off

4. 20 at $5.98 per item

A. Add
B. Subtract
C. Multiply
D. Divide
E. Round off

5. Change

A. Add
B. Subtract
C. Multiply
D. Divide
E. Round off

6. Equal parts

A. Add
B. Subtract
C. Multiply
D. Divide
E. Round off

SKILL SHEET

4.1.1 CHOOSE A REASONABLE ANSWER FOR A MATHEMATICAL PROBLEM

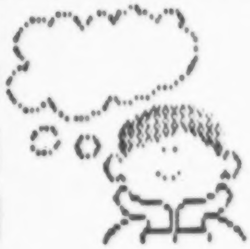
RA1 ROUND OFF NUMBERS

Round off the numbers to specified place values.

NUMBER	TENS	HUNDREDS	THOUSANDS
1. 2,648			
2. 5,141			
3. 8,979			
4. 24,731			
5. 78,809			

Round off the following money amounts to the nearest dollar.

AMOUNT	DOLLARS
6. $12.37	
7. $9.53	
8. $7.81	
9. $20.47	
10. $6.50	



SKILL SHEET

4.1.1 CHOOSE A REASONABLE ANSWER FOR A MATHEMATICAL PROBLEM

RA2 CHOOSE A REASONABLE ANSWER FOR MATHEMATICAL PROBLEM

Estimate the answers to the following problems.

1. Joan buys $36.17 worth of clothing. If she had a hundred dollar bill with her when she went shopping, about how much change did she return home with?

2. Advertising costs for a restaurant were $376 in May and $857 in June. About what was the difference in cost?

3. Restaurant income was as follows: January, $4,436; February, $4,737; March, $7,526. About how much was the total income?

RA2 CHOOSE A REASONABLE ANSWER FOR MATHEMATICAL PROBLEM, cont.

---

4. Nathan spent $8.95 for an album, $1.75 for miniature golf, $3.50 for a movie ticket, and $4.35 for food. About how much did he spend in all?

---

5. Jessica plans to buy a canoe. The catalog shows a list price of $379.95. The sale price is $209.50. About what was the difference in the two prices?

Solve Money Problems Using Addition and Subtraction (5.1.2)

Part I

KW1

Circle the key words in these problems.

1. Mary Ann made three purchases at the store. The amounts were $13.75, $1.42, and $83.00. What was the total amount of all three purchases?

2. Jane gave the clerk $20.00. The amount of her purchase was $17.14. How much change should she receive?

3. Dave had $5.00 to spend on lunch. He purchased two slices of pizza for $2.50 and a milk for 60¢. How much money did he have left?

KW2

Read these key words and tell whether to add or subtract.

4. total __________
5. difference __________
6. all together __________
7. change __________
8. how much more __________
9. how much less __________
10. in all __________

In **problem #3** from above, two mathematiical operations (+,-,x,÷) must be performed.

11. What must be done first? ________ 12. second? ________

Solve Money Problems Using Addition and Subtraction (5.1.2)

Part II

MAS1

Solve the problem and circle the correct answer.

1. Decorations for the school dance cost $150.00. The band for the dance costs $680.00. What is the total cost for the decorations and the band?

   A. $830.00
   B. $829.00
   C. $831.00
   D. $840.00

2. The profit from ticket sales at football games was $826.00. From this profit, the class bought gym equipment for $322.00 and had programs printed for $207.00. How much money was left?

   A. $297.00
   B. $1,355.00
   C. $287.00
   D. $529.00

3. Andrea has $738.30 in her savings account. She plans to spend $12.98 on her boyfriend's birthday present and $28.50 on a new dress. How much money will she have left in her savings account?

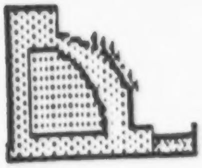
   A. $41.48
   B. $414.48
   C. $696.82
   D. $779.78

4. Mr. Slater bought art supplies consisting of paper which cost $12.98, paints which cost $22.50, and brushes which cost $15.68. How much did he spend?

   A. $35.48
   B. $38.18
   C. $42.76
   D. $51.16

SKILL SHEET

5.1.2 SOLVE MONEY PROBLEMS USING ADDITION AND SUBTRACTION



SKILL SHEET

5.1.2 SOLVE MONEY PROBLEMS USING ADDITION AND SUBTRACTION

KW1 SELECT KEY WORDS AND PHRASES IN THE FOLLOWING PROBLEMS

Circle the key words in the following problems.

1. The kindergarten class ate lunch at McDonalds. They spent $10.50 on hamburgers, $7.75 on french fries, and $8.00 on drinks. How much did they spend all together?
2. Andy is saving for a new leather jacket which costs $125.00. He has $59.75. How much more does he need?
3. The eatery sells a dozen doughnuts for $2.95 and the Dough Boy sells them for $3.98. What is the difference in prices?
4. On Tuesday, Mr. Henderson spent $3.00 on parking, $7.98 on lunch, and $5.00 for a haircut. How much did he have left from a twenty dollar bill?
5. Jamie wanted to buy a 69¢ bag of chips and a coke for 50¢, but she only had a dollar. How much more did she need?

____

____

SKILL SHEET

5.1.2 SOLVE MONEY PROBLEMS USING ADDITION AND SUBTRACTION

KW2 SLELECT AN OPERATION ACCORDING TO KEY WORDS AND PHRASES

Match the following.

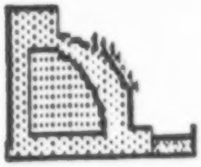
_______1. Equal parts
_______2. Change
_______3. In all
_______4. 5 at $.49 each
_______5. Average

A. Multiply
B. Add
C. Divide
D. Add and then divide
E. Subtract

Match the following.

_______1. Total
_______2. 5% of $39
_______3. Split the cost
_______4. About
_______5. Difference

A. Subtract
B. Divide
C. Multiply
D. Add
E. Round off



SKILL SHEET

5.1.1 SOLVE MONEY PROBLEMS USING ADDITION AND SUBTRACTION

MAS1 SOLVE MONEY PROBLEMS USING ADDITION AND SUBTRACTION

Solve these problems.

1. Jason bought three items for school. The eraser cost $.03, the notebook cost $.85, and the pencil cost $.08. What is the total cost?

2. The profit from the ticket sales at football games was $826.00. From this profit, the class bought gym equipment for $322.00 and had programs printed for $207.00. How much money was left?

3. Decorations for the school dance cost $150.00. The band for the dance costs $680.00. What is the total cost for the decorations and the band?

4. Shannon earned $190.00. Her class ring cost $78.40. How much money did she have left?

Solve Money Problems Using Multiplication and Division (5.1.3)
Part I

KW1

Circle the key words in these word problems.

1. A bank clerk earns $32.72 for 8 hours of work. How much does he earn per hour?

2. A restaurant sells whole submarine sandwiches. What is the total bill of 9 sandwiches at $1.85 per sandwich?

3. The play cast ordered pizza and soda. How much will each pay if there are 12 members of the cast and the total bill comes to $26.40?

KW2

Read these key words and tell whether to multiply or divide.

4. split the cost ____________
5. average ____________
6. equal parts ____________
7. total cost ____________
8. per minute ____________
9. How much does each one cost? ____________
10. How much do five notebooks cost? ____________

---

11. Would you multiply or divide in **problem #1** above? ____________
12. Would you multiply or divide in **problem #2** above? ____________
13. Would you multiply or divide in **problem #3** above? ____________

Solve Money Problems Using Multiplication and Division (5.1.3)

Part II

MMD1

Solve the problems and circle the correct answers.

1. Wayne won $780 in a contest. The money will be paid in 12 equal payments. How much is each payment?

A. $65.00
B. $0.65
C. $6.50
D. $650.00

2. Spark plugs are on sale at $1.19 each. What is the cost of 8 spark plugs?

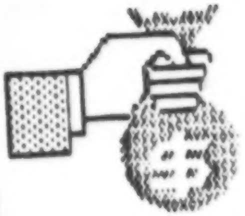
A. $950
B. $5.90
C. $95.90
D. $9.52

3. Tires cost $59.89 each. What is the cost of 8 tires?

A. $47.91
B. $479.12
C. $49.71
D. $4971

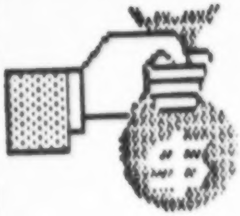
4. Five members of the Young family went out to eat at a buffet. The total bill was $37.50. How much did the buffet cost each person?

A. $5.00
B. $7.50
C. $2.95
D. $8.50



SKILL SHEET

5.1.3 SOLVE MONEY PROBLEMS USING MULTIPLICATION AND DIVISION



SKILL SHEET

5.1.3 SOLVE MONEY PROBLEMS USING MULTIPLICATION AND DIVISION

KW1 SELECT KEY WORD AND PHRASES IN A WORD PROBLEM

Circle the key words in the following problems.

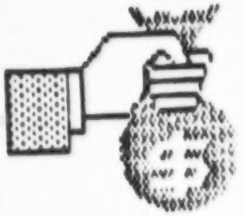
1. Michael bought 7 shares of BVV stock for $62.44. What is the cost per share?

2. There are 5 children in the Williams family. If the dental bill for each child is $24.00, what is the total bill for the children?

3. The sophmore class bought boxes of pens to sell for a fund raiser. If one box cost $12.00 and contains 24 pens, how much did they pay for one pen?

4. Mrs. Frost pays $1.05 a week for her newspaper. How much does it cost her each day?

5. The Sunshine Club purchased 15 pounds of pecans at $1.98 per pound. What was their total bill?



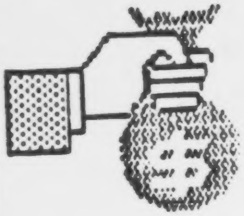
SKILL SHEET

5.1.3 SOLVE MONEY PROBLEMS USING MULTIPLICATION AND DIVISION

KW2 SELECT AN OPERATION ACCORDING TO KEY WORDS AND PHRASES

Read these key words and tell whether to add, subtract, multiply, or divide.

1. Difference ______
2. All together ______
3. How much more ______
4. Equal parts ______
5. 12 at 5¢ each ______
6. Average ______
7. Change ______
8. In all ______
9. Split the cost ______
10. 20% of $500 ______



SKILL SHEET

5.1.3 SOLVE MONEY PROBLEMS USING MULTIPLICATION AND DIVISION

MMDI SOLVE MONEY PROBLEMS USING MULTIPLICATION AND DIVISION

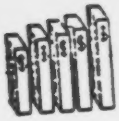
Solve these problems.

1. The school sells pens for $2.38. At the end of the month, 27 pens were sold. What was the total income made for the sale of pens?

2. Four friends went to an amusement park where they spent $59.44. If they split the cost equally, how much will each person pay?

3. The Seidels paid $31.32 a night for a motel room while on vacation. What will their bill amount to if they stay 13 days?

4. Over a 4 week period, the Thomas family spent $356.12 on groceries. What did they spend per week?



Solve Problems Using Percents (5.1.4)

PD3

1. Change the percents to decimals.

A. 7% = ________

B. 90% = ________

C. 27% = ________

PD3

2. In this word problem, write the % as a decimal.

The property tax is 4%.

A. 4.000 C. .04

B. 4.0 D. .4

PD3

3. In this word problem, write the % as a decimal.

The Clark's dinner was $55.00
They left a 15% tip.

A. .15
B. 15.00
C. $55
D. 1.5

MD2

4. Place the decimal in the correct place in the answer.

$50
X .04
$200

MD2

5. Place the decimal point in the correct place in the answer.

$786
X .32
1572
2358
$25152

MD2

6. Place the decimal point in the correct place in the answer.

490
X .8
3920

PN2

7. Multiply
$398 X 15% = _____

PN2

8. Multiply
$12.00 X 6% = _____

Solve Problems Using Percents (5.1.4), cont.

PN2

9. Multiply

829 X 70% = _____

MUP1

11. The Booster Club received 50% of all sales at their last fundraiser. If they sold $453.00 worth of merchandize, how much did they raise?

A. $226.50 C. $226.60
B. $225.50 D. $226.40

MUP1

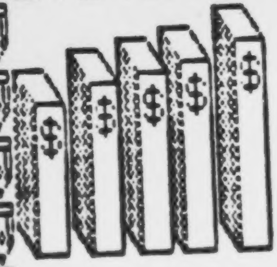
10. Sandra purchased a dress on sale for 30% off its list price of $40.00. How much did she save?

A. $30.00 C. $12.00
B. $32.00 D. $42.00

MUP1

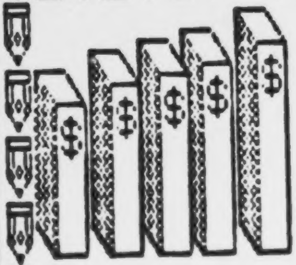
12. There were 220 people in church last Sunday. If 25% of them were children, how many children were in church?

A. 55 C. 110
B. 68 D. 200



SKILL SHEET

5.1.4 SOLVE PROBLEMS USING PERCENTS



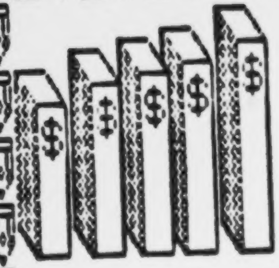
SKILL SHEET

5.1.4 SOLVE PROBLEMS USING PERCENTS

PD3 RENAME PERCENTS AS DECIMALS

Write decimals for the following percents.

1. 50% = ____________________
2. 75% = ____________________
3. 5% = ____________________
4. 10% = ____________________
5. 25% = ____________________
6. 90% = ____________________
7. 2% = ____________________
8. 65% = ____________________
9. 95% = ____________________
10. 35% = ____________________



SKILL SHEET

5.1.4 SOLVE PROBLEMS USING PERCENTS

PN2 FIND A PERCENT OF A NUMBER

Solve these problems.

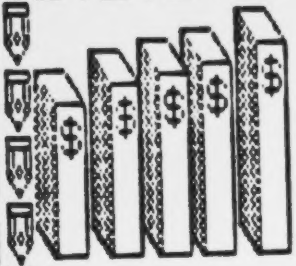
1. 5% of $.75 =

2. 65% of $290 =

3. 40% of $500 =

4. 15% of $7.50 =

5. 8% of $62 =



SKILL SHEET

5.1.4 SOLVE PROBLEMS USING PERCENTS

MD2 PLACE THE DECIMAL POINT IN THE PRODUCT CORRECTLY, WITH UP TO TWO DECIMAL PLACES

Place the decimal point in the answer.

1.
$500
X .25
2500
1000
12500

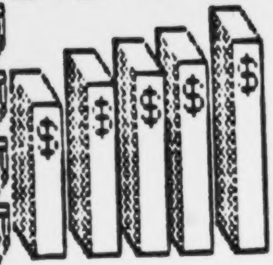
2.
$1000
X .05
5000
0000
5000

3.
$895
X .65
4475
5370
58175

4.
999
X .8
7992

5.
468
X .03
1404
000
1404

6.
139
X .85
695
1112
11815



SKILL SHEET

5.1.4 SOLVE PROBLEMS USING PERCENTS

MUP1 SOLVE PROBLEMS USING PERCENTS

Solve these problems.

1. Mr. King sells encyclopedias for $850 a set. He gets a 10% commission on each set he sells. How much does he earn from selling one set?

2. In the tenth grade, at Walt Whitman High, 15% of the students can speak two languages. There are 300 students in the tenth grade. How many can speak two languages?

3. Tracy bought a skirt on sale for 35% off the regular price. If the regular price was $18, how much did she pay?

4. A poll was taken to see how many students like country music. 30% of the 120 students interviewed selected it first. How many students selected country music first?

Make Change (5.1.5)
Part I

MC1

1. Write penny, nickel, dime, or quarter

A. 25¢ ______________

B. $0.01 ______________

C. 5¢ ______________

D. 1¢ ______________

E. $0.10 ______________

F. $0.25 ______________

G. 10¢ ______________

H. $0.05 ______________

MC2

2. Match the number word with the correct amount.

one dollar

A. $2.00
B. $1.00
C. $10.00
D. $0.10

MC2

3. Match the number word with the correct amount.

twenty dollars

A. $2.00
B. $20.00
C. $0.20
D. $200.00

MC2

4. Match the number word with the correct amount.

five dollars

A. $50.00
B. $0.50
C. $5.00
D. $15.00

MC2

5. Match the number word with the correct amount.

ten dollars

A. $1.00
B. $100.00
C. $0.10
D. $10.00

Make Change (5.1.5)
Part II

KW1

1. Circle the key words in this problem.

If Kendra buys a pair of jeans for $18.65 and gives the cashier a twenty dollar bill, how much change should should she receive?

KW1

2. Circle the key words in this problem.

If Jerome buys gum for 60¢, a magazine for $1.50, and a coke for 45¢, what change should he receive from a five dollar bill?

KW1

3. Circle the key words in this problem.

If Stan buys a pack of paper for $1.20, what is his change from a twenty dollar bill?

MC3

4. Fill in the chart with the correct number of bills and coins.

KW2

5. Tyrone bought a shirt for $12.98. He gave the clerk a twenty dollar bill. How much change should he receive?

In this problem, do you add or subtract?

____

KW2

6. Jenny purchased 3 pairs of socks at $2.50 per pair. What was her total cost?

In this problem, do you add, subtract, multiply, or divide?

____

KW2

7. Franco gave the pizza man a ten dollar bill for a small pie that cost $7.65. What change did he receive?

In this problem, do you add, subtract, multiply, or divide?

____

	10 dollar bill	5 dollar bill	1 dollar bill	quarter	dime	nickel	penny
$5.68							
$14.30							
$2.98							
$18.19							

Make Change (5.1.5)
Part III

MC4

1. If Mr. Hart purchased a new fishing rod for $18.39 and paid the salesperson with a twenty dollar bill, what was his change?

A. a one dollar bill, two quarters, a nickel, a penny
B. a one dollar bill, two quarters, a dime, a penny
C. a one dollar bill, two quarters, four nickels, a penny
D. a one dollar bill, three quarters, a dime, a penny

---

2. If Dave paid for a box of Twinkies that cost $1.27 with a five dollar bill, what change did he need?

A. three one dollar bills, one quarter, two dimes, three pennies
B. three one dollar bills, two quarters, two dimes, three pennies
C. four one dollar bills, two quarters, a dime, two pennies
D. four one dollar bills, two quarters, a dime, two pennies

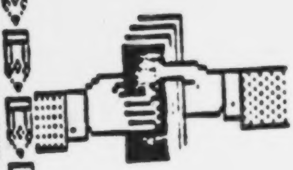
---

3. Jane bought gloves for $7.72. What change did she receive from her twenty dollar bill?

A. a five dollar bill, one quarter, three pennies
B. a ten dollar bill, one quarter, one nickel, three pennies
C. a ten dollar bill, two dollar bills, one quarter, three pennies
D. a ten dollar bill, three dollar bills, one quarter, three pennies

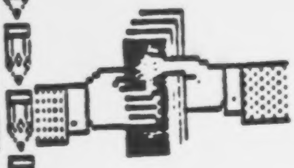
____

____



SKILL SHEET

5.1.5 MAKE CHANGE



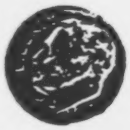
SKILL SHEET

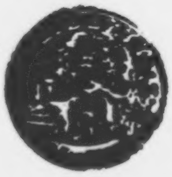
5.1.5 MAKE CHANGE

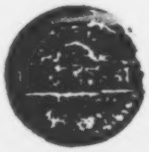
MC1 IDENTIFY THE VALUE OF A PENNY, A NICKEL, A DIME, AND A QUARTER

Circle the letter of the correct answer.

1. A dime (10¢) is equal to:

A.


B.


C.


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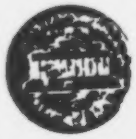
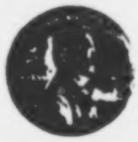
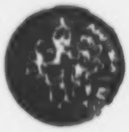
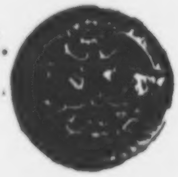
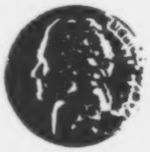


2. A penny (1¢) is equal to:

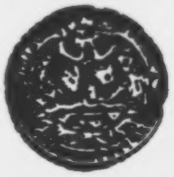
A.


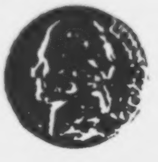
B.


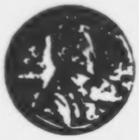
C.


D.


3. A nickel (5¢) is equal to:

A.


B.


C.


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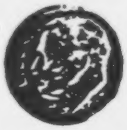
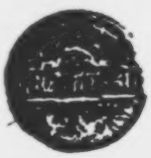
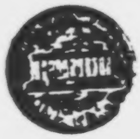
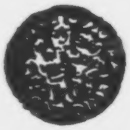
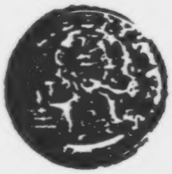


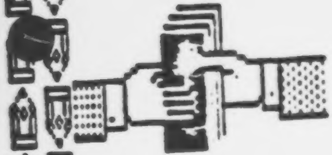
4. A quarter (25¢) is equal to:

A.


B.


C.


D.




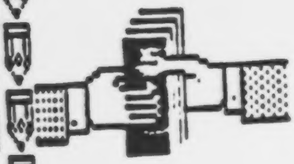
SKILL SHEET

5.1.5 MAKE CHANGE

MC2 WRITE ONE-, FIVE-, TEN-, AND TWENTY-DOLLAR BILLS...

Write out the value of the following bills in numbers using two decimal places.

1. five dollar bill = ____________________
2. twenty dollar bill = ____________________
3. one dollar bill = ____________________
4. ten dollar bill = ____________________



____

____

SKILL SHEET

5.1.5 MAKE CHANGE

KW1 SELECT KEY WORDS AND PHRASES IN A WORD PROBLEM

Circle the most important word (s) in the following problems.

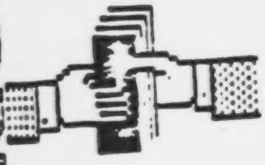
1. What change would you receive if you bought a dozen eggs for $.77 and paid for them with a five dollar bill?

2. The bill for your dinner is $8.83. You gave the cashier a ten dollar bill. What is your change?

3. John paid for his school lunch with a five dollar bill. If lunch cost $1.05, how much change did he get back?

4. Kelly bought three gumballs at five cents each? What is her change from a one dollar bill?

5. Mrs. Williams took Karl and Joe shopping. She bought a blouse for Karl which cost $7.98 and a pair of socks for Joe which cost $2.50. How much change did she receive from a twenty dollar bill?



SKILL SHEET

5.1.5 MAKE CHANGE

KW2 SELECT AN OPERATION FROM KEY WORDS OR PHRASES

Use the symbols for addition (+), subtraction (-), multiplication (x), or division (÷), to indicate what operation (s) is needed in the following problems.

1. Mr. Johnson gave the clerk a twenty dollar bill to pay for his wife's new hat which cost $17.98. What change did he receive?

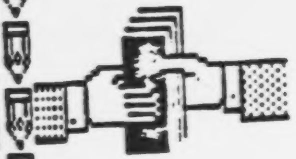
2. Amy bought a pen for $.98 and a notebook for $1.50. What change will she get from a five dollar bill?

3. Mona bought three concert tickets at $6.00 each. What change did she get from a twenty dollar bill?

4. The staff at the library ate lunch at the Pizza Hut. The entire bill was $32.00 so they divided it evenly among the 8 members. What change will Ellen receive from her five-dollar bill?

5. Frank bought 3 golf balls at $1.25 each. What change did he receive from a ten dollar bill?

6. Maria got the Big Whopper Special for $3.75. What change did she receive from a five dollar bill?



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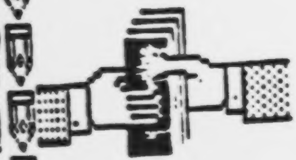
SKILL SHEET

5.1.5 MAKE CHANGE

MC3 CONVERT A SUM OF MONEY INTO THE FEWEST BILLS AND COINS POSSIBLE

Fill in the chart with the correct change.

	$12.18	$4.55	$7.68	$11.41	$15.98
ten dollar bill					
five dollar bill					
one dollar bill					
quarter					
dime					
nickel					
penny					



SKILL SHEET

5.1.5 MAKE CHANGE

MC4 SOLVE MONEY PROBLEMS INVOLVING MAKING CHANGE

Solve these problems.

1. The cleaning bill was $5.98. How much change will Karen receive from her ten dollar bill?

2. Bill bought a magazine for $1.98 and a candy bar for $.45. How much change did he get back from a five dollar bill?

3. Mr. Grayson took his wife out to eat at a buffet which cost $6.98 per person. How much change will he receive from a twenty dollar bill?

4. Kelly bought a notebook for $1.65, a pen for $.98, and a ruler for $.59. How much change will she receive from a five dollar bill?

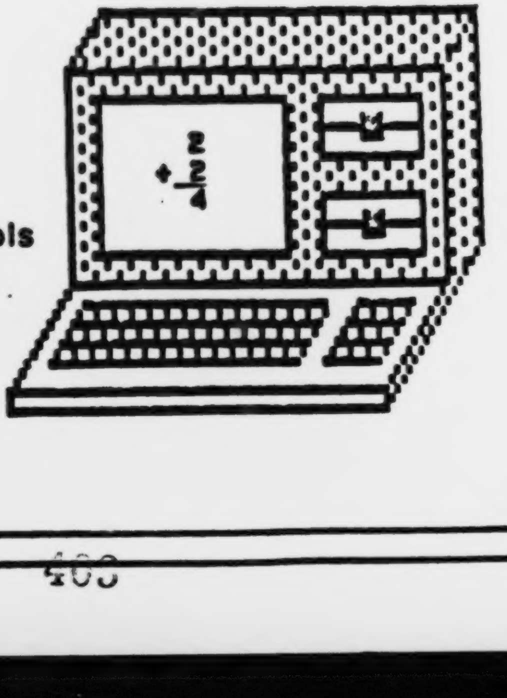
INTEGRATING COMPUTER SOFTWARE INTO THE FUNCTIONAL MATHEMATICS CURRICULUM: A DIAGNOSTIC APPROACH

SECTION THREE

SOFTWARE MATERIALS

Effective Computer Instruction
for
Effective Special Education

Prince George's County Public Schools
Department of Special Education
1989



SOFTWARE MATERIALS
TABLE OF CONTENTS

1. SOFTWARE MATRICES

The software matrices are organized by domain, objective, and skill as they appear in the Domain Directory. They correlate specific skills to activities within software programs.

Number Concepts III-1
Whole Number Operations III-5
Mixed Number/Fraction Operations III-12
Decimal Operations III-17
Measurement III-22
Using Data III-26
Problem Solving III-29

2. SOFTWARE SUMMARIES

The software summaries are arranged alphabetically first by the name of the publishing company, second by the title of the program, and finally by the name of a particular activity within the program.

Davidson and Associates, Inc.

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Milliken

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Public Domain

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World Book Discovery, Inc.

Data Hurdles III-447

400

	N1	N2	N3	N4	N5	N6	N7	N8	N9	N10	N11	N12	N13
	Identify place value	Identify word names for one through nineteen	Write digits for words one through nineteen	Identify word names for 20, 30, 40...90	Write digits for words twenty, thirty, forty...ninety	Identify hyphenated number words from 21-99	Write digits for hyphenated word names from 21-99	Identify word names for 100 and 1,000	Write the digits for hundred and thousand	Identify word names tenths and hundredths from the digit	Write the digits for tenths and hundredths	Recognize that "and" represents the dec. pt.	Write numbers in words and digits
MECC: DEC. CONCEPTS													
Maze Runner	X	X		X		X		X		X		X	
***MECC: QUICKFLASH!**													
Number Name			0		0		0						
Word Name										0			
Tenths Place Value	0									0			
Hundredths Place Value	0									0			
Decimal Point												0	
Numbers to Words													0
***MECC: STUDY GUIDE**													
Place Value	0												
EDUCATIONAL ACT.:													
SALINA MATH GAMES													
Round Table	0	0		0		0		0		0			
PUBLIC DOMAIN													
MFMT Practice Session													0

X This program will not run on the Apple II+.

* A special data disk is needed. See Appendix C for more information.

	Recall from memory 1/3 = 33 1/3% and 2/3 = 66 2/3%		
		Rename fractions as percents	
	P1	P2	
MECC: DEC. CONCEPTS			
Decimal Bounce		X	
MATH BLASTER	0	0	
MILLIKEN: MATH SERIES			
Percents		2	
PUBLIC DOMAIN			
MFMT Practice Session		0	
X This program does not run on the Apple II+.			

	Identify the correct location of a decimal point			
		Identify the left direction		
			Rename percents as decimals	
	PD1	PD2	PD3	
***MECC: STUDY GUIDE**				
Move Decimal Point		0		
Rename Percents			0	
MATH BLASTER			0	
MILLIKEN: MATH SERIES				
Percents			2-4	
PUBLIC DOMAIN				
MFMT Practice Session			0	

* A special data disk is needed. See Appendix C for more information.

	Write numbers in a column according to the decimal place	Identify the smallest in a group of numbers	Arrange a group of numbers from least to greatest	
	OD1	OD2	OD3	
MECC: DEC. CONCEPTS				
Maze Runner		X		
***MECC: STUDY GUIDE**				
Smallest Number		0		
Order Decimals			0	
PUBLIC DOMAIN				
MFMT Practice Session			0	

* A special data disk is needed. See Appendix C for more information.

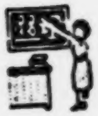
X This program does not run on the Apple II+.

	Recall addition number facts	Add 2 numbers with up to 2 digits each, no regrouping	Add 2 numbers with up to 3 or 4 digits each, no regrouping	Add three 1-digit numbers	Add 2 numbers with up to 3 or 4 digits each, no regrouping	Add 2 numbers with up to 2 digits each, regrouping ones to tens	Add 2 #'s with up to 3 or 4 digits each, regrouping 1's to 10's	Add 2 #'s with up to 3 digits, regrouping 10'S to 100's	Add 2 #'s with up to 4 digits each, 1-2 regroupings	Add 2 #'s, up to 4 digits, 1-3 regroupings	Add 3 #'s, up to 2 digits, regrouping	Add 3 #'s, up to 4 dig., regrouping	
	A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	A11	A12	
MECC: ADDITION LOGICIAN													
Race Time						0	0			0	0		
Repeat After Me								0		0		0	
Three in a Row						0	0						
Zebug Nim						0					0		
MECC: ARITHMETIC CRITTERS													
Animal Addition	0												
Egg Plant	0												
Unit Worm	0												
MECC: CONQ. WHOLE NUMBERS													
Addition										0		0	
MECC: NUMBER MUNCHERS													
Equality	0												
Inequality	0												
MECC: SPEEDWAY MATH													
The Big Race	0												
Practice Laps	0												
Tune-Up Time	0												
MATH BLASTER	0												

	Recall addition number facts	Add 2 numbers with up to 2 digits each, no regrouping	Add 2 numbers with up to 3 or 4 digits each, no regrouping	Add three 1-digit numbers	Add 2 numbers with up to 3 or 4 digits each, no regrouping	Add 2 numbers with up to 2 digits each, regrouping ones to tens	Add 2 #'s with up to 3 or 4 digits each, regrouping 1's to 10's	Add 2 #'s with up to 3 digits, regrouping 10'S to 100's	Add 2 #'s with up to 4 digits each, 1-2 regroupings	Add 2 #'s, up to 4 digits, 1-3 regroupings	Add 3 #'s, up to 2 digits, regrouping	Add 3 #'s, up to 4 dig., regrouping
	A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	A11	A12
MICROCOMPUTER WORKSHOPS												
Addition With Carry	0			0		0	0	0	0	0	0	0
MILLIKEN: MATH SERIES												
Addition	1-8	19-20	41	9-10		26-34	42-4	46-4	48-5	55-58	37-40	51-52
	11-18	23-25		21-22					53-54			59-60
				35-36								
PUBLIC DOMAIN												
MFMT Practice Session	Meets MFMT requirements											

417

416



	Recall subtraction number facts	Subtract two numbers with up to 2 digits each, no regrouping	Subtract two numbers with up to 3 digits each, no regrouping	Subtract two numbers with up to 2 digits each, regrouping tens to ones	Subtract two numbers with up to 3 digits each, regrouping tens to ones	Subtract 2 #'s, up to 3 digits each, regrouping 100's to 10's	Subtract 2 #'s, up to 3 digits each, reg. to 10's or 1's	Subtract 2 #'s, up to 2 digits each, 1 or 2 reg.	2 #'s, up to 4 digits each, 1 to 3 reg.	2 #'s, up to 5 digits, 1 to 4 regroupings
	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10
MECC: ARITHMETIC CRITTERS										
Fowl Play	0									
MECC: CONQ. WHOLE NUMBERS										
Subtraction								0	0	
MECC: NUMBER MUNCHERS										
Equality	0									
Inequality	0									
MECC: SPACE SUBTRACTION										
Cosmic Creature	0									
Shuttle Trip	0	0	0							
Space Match		0	0							
Zemoon Walk	0									
MECC: SPEEDWAY MATH										
The Big Race	0									
Practice Laps	0									
Tune-Up Time	0									
MECC: SUBTRACTION PUZZLES										
Balloon Trip				0	0	0				
Magic Carpet						0				
Name that Creature				0						
Space Pegs				0						
Trace				0	0					

	Recall subtraction number facts	Subtract two numbers with up to 2 digits each, no regrouping	Subtract two numbers with up to 3 digits each, no regrouping	Subtract two numbers with up to 2 digits each, regrouping tens to ones	Subtract two numbers with up to 3 digits each, regrouping tens to ones	Subtract 2 #'s, up to 3 digits each, regrouping 100's to 10's	Subtract 2 #'s, up to 3 digits each, reg. to 10's or 1's	Subtract 2 #'s, up to 2 digits each, 1 or 2 reg.	2 #'s, up to 4 digits each, 1 to 3 reg.	2 #'s, up to 5 digits, 1 to 4 regrouping	
	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	
MATH BLASTER	0										
MICROCOMPUTER WORKSHOPS											
Subtraction	0	0	0	0	0	0	0	0	0	0	
MILLIKEN: MATH SERIES											
Subtraction	1-8	23	32	24-31		33-34	35-37	38-43	44-50	51-54	
	13-21										
PUBLIC DOMAIN											
MFMT Practice Session	Meets MFMT requirements										

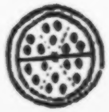
421 422

	Recall multiplication number facts	Multiply 1-digit bottom number times 2-digit top number, no regrouping	Multiply 1-digit bottom number times3- or 4-digit top number, no regrouping	Multiply 1-digit bottom number times 2-digit top number, regrouping	Multiply 1-digit bottom number times 3- or 4-digit top number	Multiply 2-digit no. times 2-digit no., regrouping	1-digit no. times up to 4-digit no., regrouping	
	M1	M2	M3	M4	M5	M6	M7	
MECC: CONQ. WHOLE NUMBERS								
Multiplication			0				0	
MECC: MULTIPLICATION PUZZLES								
Carrot Patch				0	0			
Desert Island		0	0					
Lights Out	0							
Paper, Rock, Scissors	0							
Tic-Tac-Toe	0							
Zoo Trip	0	0	0	0	0			
MECC: NUMBER MUNCHERS								
Factors	0							
Multiples	0							
MECC: SPEEDWAY MATH								
The Big Race	0							
Practice Laps	0							
Tune-Up Time	0							
MATH BLASTER	0							
MICROCOMPUTER WORKSHOPS								
1-2-3 Digit Multiplication					0	0	0	
MILLIKEN: MATH SERIES								
Multiplication	1-30	32	31;36	33-35	37-42	43-49	50-59	
PUBLIC DOMAIN								
MFMT Practice Session	Meets MFMT requirements							

D1 Recall division number facts
D2 1-digit divisor into 2-digit dividend, all sight division, no remainders
D3 1-digit divisor into 2-digit dividend, remainders possible
D4 1-digit divisor into 3-digit dividend, all sight division, no remainders
D5 1-digit divisor into 3-digit dividend, remainders possible
D6 1-digit divisor into 4-digit dividend, sight division, no rem.
D7 1-digit divisor into 4-digit dividend, remainders poss
D8 2-digit divisor into 3-digit dividend, rem. pos
D9 2-dig. into 2-dig., remainders poss.
D10 2-dig. into 3-dig., rem. poss.
D11 2-d. into 4-d., rem. p
D12 5 d/ 2 d, r p

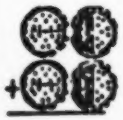
	D1	D2	D3	D4	D5	D6	D7	D8	D9	D10	D11	D12	
MECC: CONQ. WHOLE NUMBERS													
Division					0				0		0	0	
MECC: QUOTIENT QUEST													
African Safari	0												
Castle Caper		0		0	0								
Magic Flags	0												
Oriental Towers			0		0	0							
Pearl Divers	0	0	0	0	0	0							
Totem Switch			0										
MECC: SPEEDWAY MATH													
The Big Race	0												
Practice Laps	0												
Tune-Up Time	0												
MATH BLASTER	0												
MICROCOMPUTER WORKSHOPS													
Long Division				0		0		0					

	Recall division number facts	1-digit divisor into 2-digit dividend, all sight division, no remainders	1-digit divisor into 2-digit dividend, remainders possible	1-digit divisor into 3-digit dividend, all sight division, no remainders	1-digit divisor into 3-digit dividend, remainders possible	1-digit divisor into 4-digit dividend, sight division, no rem.	1-digit divisor into 4-digit dividend, remainders poss	2-digit divisor into 3-digit dividend, rem. pos	2-dig. into 2-dig., remainders poss.	2-dig. into 3-dig., rem. poss.	2-d. into 4-d., rem. p	5 d/ 2 d, r p	
	D1	D2	D3	D4	D5	D6	D7	D8	D9	D10	D11	D12	
MILLIKEN: MATH SERIES													
Division	2-3	42	40-41	45	46-47	48	49-51	52	53	54	55	62-64	
	5-8		43-44							56-60	61		
	17-18												
	20-23												
	25-26,28-29												
	31-32,34-39												
PUBLIC DOMAIN													
MFMT Practice Session	Meets MFMT requirements												

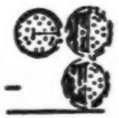


	Recognize numerator and denominator	Recognize reduced and not reduced	Reduce fractions to lowest terms	Recognize proper and improper fractions and mixed numbers	Convert improper fraction to mixed number	
	V1	R1	R2	C1	C2	
MECC: FRACTION CONCEPTS						
Crusher/Proper Fractions				X		
MECC: FRACTION MUNCHERS						
Equal Fractions			X			
Fraction Expressions			X			
Fraction Types		XX		X		
MECC: FRACTION PRACTICE UNL.						
Changer/Reduce Fractions			X			
Sorter/Proper & Improper		X				
Sorter/Reduced & Not Reduced		X				
MATH BLASTER			0		0	
MILLIKEN: MATH SEQUENCES						
Simplify Fractions			0		0	

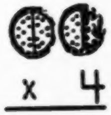
X This program will not run on the Apple II+.

	Recognize numerator and denominator V1	Recognize reduced and not reduced fractions R1	Reduce fractions to lowest terms R2	Find a common denominator or LCD A1	Rename fractions to a given denominator A2	Add fractions with like denominators A3	Add fractions with unlike denominators A4	Add mixed numbers with like denominators A5	Add mixed numbers with unlike denom. A6	
MECC: CONQUER. FRACT. (+,-)										
Addition				X	X	X	X	X	X	
MECC: FRACTION CONCEPTS										
Crusher/Equal Fractions				X	X					
MECC: FRACTION MUNCHERS										
Equal Fractions			X							
Fraction Expressions			X			X				
Fraction Types		X								
MECC: FRACT. PRACTICE UNL.										
Changer/Reduce Fractions			X							
Changer/Rename Fractions					X					
Sorter/Proper & Improper		X								
Sorter/Reduced & Not Reduced		X								
MATH BLASTER			0							
MICROCOMPUTER WORKSHOP										
Adding Fractions			0	0	0	0	0		0	
MILLIKEN: MATH SEQUENCES										
Simplify Fractions			0							
Add Fractions				17-20	1-3	14-16	18,21-22		25	
PUBLIC DOMAIN										
MFMT Practice Session								0	0	

X This program will not run on the Apple II+.



	Recognize numerator and denominator	Recognize reduced and not reduced fractions	Reduce fractions to lowest terms	Find a common denominator or LCD	Rename fractions to a given denominator	Subtract fractions with like denominators	Subtract fractions with unlike denominators	Subtract mixed numbers with like denominators	Subtract mixed no.s with unlike denom.	
	V1	R1	R2	A1	A2	S3	S4	S5	S6	
MECC: CONQUER. FRACT. (+,-)										
Subtraction			X			X	X	X	X	
MECC: FRACTION CONCEPTS										
Crusher/Equal Fractions				X	X					
MECC: FRACTION MUNCHERS										
Equal Fractions			X							
Fraction Expressions			X							
Fraction Types		X								
MECC: FRACT. PRACTICE UNL.										
Changer/Reduce Fractions			X							
Changer/Rename Fractions					X					
Sorter/Proper & Improper		X								
Sorter/Reduced & Not Reduced		X								
MATH BLASTER			0							
MICROCOMPUTER WORKSHOP										
Subtracting Fractions			0	0	0				0	
MILLIKEN: MATH SEQUENCES										
Simplify Fractions			0							
Subtract Fractions				17-20	1-3	15-16	19,23-24		27	
PUBLIC DOMAIN										
MFMT Practice Session								0	0	
X This program does not run on the Apple II+.										

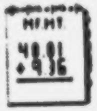
	Recognize reduced and not reduced fractions R1	Reduce fractions to lowest terms R2	Recognize proper and improper and mixed umbers C1	Convert improper fraction to mixed number C2	Multiply a whole number by a fraction M1
MECC: CONQUER. FRACT. (X,+)					
Mulitplication		X	X	X	X
MECC: FRACTION CONCEPTS					
Crusher/Proper Fractions			X		
MECC: FRACTION MUNCHERS					
Equal Fractions		X			
Fraction Expressions		X			X
Fraction Types	X		X		
MECC: FRACTION PRACTICE UNL.					
Changer/Reduce Fractions		X			
Sorter/Proper & Improper	X				
Sorter/Reduced & Not Reduced	X				
MATH BLASTER		0		0	
MILLIKEN: MATH SEQUENCES					
Simplify Fractions		0		0	
Multiply Fractions					28
MICROCOMPUTER WORKSHOP					
*Multiplying Fractions					
PUBLIC DOMAIN					
MFMT Practice Session					0

* This program does not meet the requirements of the MFMT.

X This program does not run on the Apple II+.

2.1.13 FIND A MISSING TERM IN A PROPORTION

	Find the missing term in a proportion	
	T1	
PUBLIC DOMAIN		
MFMT Practice Session	0	



	Write numbers in a column according to the decimal place	Add up to 3 numbers with 1 decimal place, without regrouping	Add up to 3 numbers with 1 decimal place, with regrouping	Add 2 numbers with 2 decimal places, without regrouping	Add 2 numbers with 2 decimal places, with regrouping	Recognize that with any decimal ending in 0(s), the 0(s) may	
	OD1	AD1	AD2	AD3	AD4	Z1	
MECC: CONQUER. DECIMALS (+,-)							
Adding Decimals	X		X		X		
MECC: DECIMAL CONCEPTS							
* Decimal Duel							
****MATH BLASTER**						0	
MATH FOR EVERYDAY LIVING							
Lesson 5						0	
MICROCOMPUTER WORKSHOP							
Adding Decimals	0	0	0	0	0		
MILLIKEN: DECIMAL SEQUENCE							
Addition		12; 13;	14	15	16		
		17					
PUBLIC DOMAIN							
MFMT Practice Session		0	0	0	0		

X This program does not run on the Apple II+.

* This program correlates indirectly to this objective. See the Software Summary for more information.

**A special data disk is needed. See Appendix C for more information.

	Subtract 2 numbers with 1 decimal place without regrouping SD1	Subtract 2 numbers with 1 decimal place with regrouping SD2	Subtract 2 numbers with 2 decimal places without regrouping SD3	Subtract 2 numbers with 2 decimal places with regrouping SD4	Recognize that decimals ending in 0(s), the 0(s) may be dropped Z1	
MECC: CONQUER. DECIMALS (+,-)						
Subtraction	X	X	X	X		
***MATH BLASTER**					0	
MATH FOR EVERDAY LIVING						
Lesson 5					0	
MICROCOMPUTER WORKSHOP						
Subtracting Decimals	0	0	0	0		
MILLIKEN: DECIMAL SEQUENCE						
Subtraction	21	22	23	24;25; 26		
PUBLIC DOMAIN						
MFMT Practice Session	0	0	0	0		

X This program does not run on the Apple II+.

* A special data disk is needed. See Appendix C for more information.

	Identify the number of decimal places in the product					
		Place the decimal point in the product correctly with up to 2 decimal places				
			Place the decimal point in the product correctly with up to 4 decimal places			
				Multiply a 3-digit no. by a 2-digit no. with up to 2 dec. places in each no.		
					Recognize that decimals ending in 0(s), the 0(s) may be dropped	
	MD1	MD2	MD3	MD4	Z1	
MECC: CONQUER. DECIMALS (x,+)						
Multiplication	X	X	X	X		
***MATH BLASTER**					0	
MATH FOR EVERYDAY LIVING						
Lesson 5	0		0		0	
MICROCOMPUTER WORKSHOP						
Multiplying Decimals	0	0	0	0		
MILLIKEN: DECIMAL SEQUENCE						
Multiplication	31; 40	41; 42	44;45			
		43				
PUBLIC DOMAIN						
MFMT Practice Session				0		

X This program does not run on the Apple II+.

* A special data disk is needed. See Appendix C for more information.

MFMT.	Place the decimal point in the quotient correctly when dividing by a whole number				
		Divide a 1-digit whole no. into a 2- to 4-digit no. having 1 or 2 decimal places			
			Divide a 2-digit whole no. into a 2- to 4-digit no. having 1 or 2 decimal places		
				Recognize that with decimals ending in 0(s), the 0(s) may be dropped	
	DD1	DD2	DD3	Z1	
MECC: CONQUER. DECIMALS (x,+)					
Division	X	X	X	X	
***MATH BLASTER**				0	
MATH FOR E. LIVING					
Lesson 5				0	
MICROCOMPUTER WORKSHOP					
**Dividing Decimals					
MILLIKEN: DECIMAL SEQUENCE					
Division	50				
PUBLIC DOMAIN					
MFMT Practice Session		0	0		

X This program does not run on the Apple II+.

* A special data disk is needed. See Appendix C for more information.

**Division goes beyond the MFMT and requires the student to divide by a decimal number.

	Rename percents as decimals		
		Translate "of" as "multiplied by"	
			Find a percent of a number
	PD3	PN1	PN2
MATH BLASTER	0		
MATH FOR EVERYDAY LIVING			
Lesson 5	0		
MILLIKEN: MATH SERIES			
Percents	2-4		
PUBLIC DOMAIN			
MFMT Practice Session			0

2.2.1 READ SCALES ON MEASURING INSTRUMENTS

	Recognize length, temp., and capacity from a scale on a measuring instrument			
		Identify the appropriate units of measure		
			Estimate to the nearest whole unit of measure	
	MM1	MM2	MM3	
MECC: ESTIMATION				
Number Line		0	0	
PUBLIC DOMAIN				
Thermometer		0		

	Identify a square					
		Identify a rectangle				
			Compute the perimeter of various polygons			
				Compute the areas of squares and rectangles		
					Recognize that area is always expressed in sq. units	
	MPA1	MPA2	MPA3	MPA4	MPA5	
MECC: MATH VOL. 3						
Perimeters	0	0	0			
Shapes of Polygons	0	0				
PUBLIC DOMAIN						
MFMT Practice Session			0	0		

3.2.2 CHOOSE AN APPROPRIATE UNIT OF MEASURE

SOFTWARE MATRIX

	Identify the key words: linear (distance, height), area, weight/mass, capacity, etc.				
		Choose the appropriate type of unit of measure for the attribute			
			Determine the relative size of what is being measured		
				Choose an appropriate magnitude of the unit of measure	
	MAU1	**MAU2**	**MAU3**	**MAU4**	
MECC: STUDY GUIDE					
*Measure MAU2		0			
*Measurement				0	
PUBLIC DOMAIN					
MFMT Practice Session				0	

*A special data disk is needed. See APPENDIX C for more information.

MET1 Identify correct time by writing hours and minutes with a colon
MET2 Recall that 60 minutes equals 1 hour
MET3 Identify start, finsh, and/or elapsed time
MET4 Subtract minutes and hours from min.s and hr.s, no regrouping
MET5 Subtract minutes and hours from min.s and hr.s, with regrouping
MET6 When the minuend is smaller than the subtrahend, add 12:00
MET7 When the answer is larger than 12:59, subtract 12:00
MET8 Find end time (start + elapsed time)
MET9 Find elapsed time (end-elapsed time)
MET10 Find start time (end-elapsed time)
MET11 Select the correct procedure...

	MET1	MET2	MET3	MET4	MET5	MET6	MET7	MET8	MET9	MET10	MET11	
MECC: CLOCKWORKS												
What's the Time?	0											
Set the Clock	0											
Digital Drill	0											
MECC: STUDY GUIDE												
*Elapsed Time								0	0	0		
MATH FOR EVERYDAY LIVING												
Lesson 9		0							0			
WORLD BOOK: DATA HURDLES												
Time								0	0			

*A special data disk is needed. See APPENDIX C for more information.

	Identify information on a table	Select key words and phrases in a question	Locate key words and phrases on a table	Find the point at which the key row and column intersect to locate data...
	UT1	KQ1	UT2	UT3
MECC: THE MARKET PLACE				
Sell Apples	0			
Sell Lemonade	0			
Sell Plants	0			
MATH FOR EVERYDAY LIVING				
Lesson 8	0			0
Lesson 9	0			
PUBLIC DOMAIN				
MFMT Practice Session	0			0

	Identify information on a circle graph	Identify information on a bar graph	Identify information on a line graph	Select key words and phrases in a question	Select an operation from key words and phrases	Identify intervals on horizontal or vertical scales	1 calculation using inform. from a graph	
	UG1	UG2	UG3	KQ1	KQ2	UG4	UG5	
MECC: GRAPH								
Graph	0	0	0			0		
MECC: GRAPHING PRIMER								
Exploring Line Graphs			0			0		
Exploring Bar Graphs		0				0		
Exploring Pie Graphs	0							
MECC: THE MARKET PLACE								
Sell Apples			0					
ED. ACTIVITIES, INC.								
GRAPHS & MEAN, MEDIAN, MODE								
Graphs		0		0		0		

5.1.1 FIND THE AVERAGE OF A SET OF NUMBERS

	Recognize that finding the average involves both addition and division			
		Line up numbers in a column		
			Find the average of a set of numbers	
	AV1	AV2	AV3	
EDUCATIONAL ACTIVITIES, INC.				
GRAPHS & MEAN, MEDIAN, MODE				
Mean, Median, Mode			0	
PUBLIC DOMAIN				
MFMT Practice Session			0	

	Identify a formula	Substitute numbers for the variables in the formula	Interpret "bh" to mean b times h	Interpret "d/2" to mean d divided by 2	Compute according to order of operations (parentheses)	Compute according to order of operations (X,+,+,-)	Compute according to order of operations (fractions)	
	UF1	UF2	UF3	UF4	UF5	UF6	UF7	
MECC: MARKET PLACE								
Sell Lemonade		0						
PUBLIC DOMAIN								
MFMT Practice Session	Meets MFMT requirements							

4.1.1 REASONABLE ANSWER FOR MATH PROBLEM

SOFTWARE MATRIX

	Select key words and phrases in a word problem	Select an operation from key words and phrases	Round off numbers	Choose a reasonable answer for a mathematical problem	
	KW1	KW2	RA1	RA2	
MECC: DECIMAL CONCEPTS					
Decimal Maze			X		
MECC: STUDY GUIDE					
*Key Words 1	0				
*Key Words 2	0				
*Which Operation 1		0			
*Which Operation 2		0			
***MATH BLASTER**			0		
MATH FOR EVERYDAY LIVING					
Lesson 1		0			
Lesson 2		0			
Lesson 3		0			
Lesson 5		0	0		
MILLIKEN: WORD MATH SERIES					
Lesson 1	0	0			
Lesson 2	0	0			
Lesson 3	0	0			
Lesson 4	0	0			
Lesson 5	0	0			
Lesson 6	0	0			
Lesson 7	0	0			
Lesson 8	0	0			
ED.ACT.: SALINA MATH GAMES					
Round Table			0		
WORLD BOOK: DATA HANDLER					
Rounding Off			0		
PUBLIC DOMAIN					X This program will not run on the Apple II+.
MFMT Practice Session				0	* A special data disk is needed. See Appendix C for information.

	Select key words and phrases in a word problem			
		Select an operation from key words and phrases		
			Solve money problems using addition and subtraction	
	KW1	KW2	MAS1	
MECC: MARKET PLACE				
Sell Apples			0	
Sell Lemonade			0	
Sell Plants			0	
MECC: STUDY GUIDE				
*Key Words 1	0			
*Which Operation 1		0		
MATH FOR EVERYDAY LIVING				
Lesson 1		0	0	
Lesson 2		0		
Lesson 3		0	0	
Lesson 5		0		
Lesson 6			0	
MILLIKEN: WORD MATH SERIES				
Lesson 1	0	0	0	
Lesson 2	0	0	0	
Lesson 3	0	0	0	
Lesson 4	0	0	0	
Lesson 5	0	0	0	
Lesson 6	0	0	0	
Lesson 7	0	0	0	
Lesson 8	0	0	0	
PUBLIC DOMAIN				
MFMT Practice Session			0	

*A special data disk is needed. See APPENDIX C for more information.

5.1.3 SOLVE MONEY PROBLEMS (X,+)

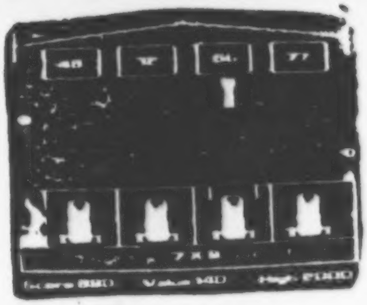
	Select key words and phrases in a word problem							
		Select an operation from key words and phrases						
			Solve money problems using multiplication and division					
	KW1	KW2	MMD1					
MECC: MARKET PLACE								
Sell Apples			0					
Sell Lemonade			0					
Sell Plants			0					
MECC: STUDY GUIDE								
*Key Words 2	0							
*Which Operation 2		0						
MATH FOR EVERYDAY LIVING								
Lesson 1		0						
Lesson 2		0	0					
Lesson 3		0	0					
Lesson 5		0						
Lesson 6			0					
Lesson 8			0					
MILLIKEN: WORD MATH SERIES								
Lesson 1	0	0	0					
Lesson 2	0	0	0					
Lesson 3	0	0	0					
Lesson 4	0	0	0					
Lesson 5	0	0	0					
Lesson 6	0	0	0					
Lesson 7	0	0	0					
Lesson 8	0	0	0					
PUBLIC DOMAIN								
MFMT Practice Session			0					
*A special data disk is needed. See APPENDIX C for more information.								

	Rename percents as decimals PD3	Find a percent of a number PN2	Place the decimal point in the product correctly MD2	Solve problems using percents MUP1	
MECC: STUDY GUIDE					
*Percents as Decimals	0				
***MATH BLASTER**	0				
MATH FOR EVERYDAY LIVING					
Lesson 5	0			0	
Lesson 8	0			0	
PUBLIC DOMAIN					
MFMT Practice Session				0	

*A special data disk is needed. See APPENDIX C for more information.

471 472

	Select key words and phrases in a word problem						
		Select an operation from key words and phrases					
			Identify the value of a penny, a nickel, a dime, and a quarter				
				Write 1-, 5-, 10-, and 20-dollar bills as $1.00, $5.00, etc.			
					Convert a sum of money into the fewest bills and coins		
						Solve money problems involving making change	
	KW1	KW2	MC1	MC2	MC3	MC4	
MECC: MONEYWORKS							
Count Change		X	X		X		
How Much Money?			X				
Money Machine			X		X		
MECC: STUDY GUIDE							
*Key Words 1	0						
*Key Words 2	0						
*Which Operation 1		0					
*Which Operation 2		0					
MATH FOR EVERYDAY LIVING							
Lesson 1		0		0			
Lesson 2		0					
Lesson 3		0					
Lesson 5		0					
MILLIKEN: WORD MATH SERIES							
Lesson 1	0	0					
Lesson 2	0	0					
Lesson 3	0	0					
Lesson 4	0	0					
Lesson 5	0	0					
Lesson 6	0	0					
Lesson 7	0	0					
Lesson 8	0	0					
PUBLIC DOMAIN							
Make Change			0				
MFMT Practice Session						0	X This program will not run on the Apple II+.
							*A special data disk is needed. See APPENDIX C.



SOFTWARE SUMMARY

Company: Davidson & Associates, Inc.
Title: MATH BLASTER!
Activity: LOOK AND LEARN
BUILD YOUR SKILL
CHALLENGE YOURSELF
MATH BLASTER!

OBJECTIVES:

MFMT:	2.1.1	Add Whole Numbers
	2.1.2	Subtract Whole Numbers
	2.1.3	Multiply Whole Numbers
	2.1.4	Divide Whole Numbers
	3.1.2	Rename Fractions as Percents
	3.1.3	Rename Percents as Decimals
	4.1.1	Choose a Reasonable Answer for a Mathematical Problem
	5.1.4	Solve Problems Using Percents

Skills:	A1	RECALL ADDITION NUMBER FACTS
	S1	RECALL SUBTRACTION NUMBER FACTS
	M1	RECALL MULTIPLICATION NUMBER FACTS
	D1	RECALL DIVISION NUMBER FACTS
	R2	REDUCE FRACTIONS TO LOWEST TERMS
	C2	CONVERT IMPROPER FRACTIONS TO MIXED NUMBERS
	P1	RECALL FROM MEMORY 1/3=33 1/3% AND 2/3=66 2/3%
	P2	RENAME THE FRACTION AS A PERCENT
	PD3	RENAME THE PERCENT AS A DECIMAL
	*RA1	ROUND OFF NUMBERS
	*Z1	RECOGNIZE THAT WITH ANY DECIMAL ENDING IN ZERO(S), THE ZERO(S) MAY BE DROPPED
	*MUP1	SOLVE PROBLEMS USING PERCENTS

*NOTE: A special data disk is needed for these skills.

ACTIVITY SUMMARY

This program contains data files of basic facts in addition, subtraction, multiplication, division, fractions, decimals, and percents. It also has an "Editor" component which allows the teacher to create files of math facts in each of the learning activities. To access the "Editor" the teacher must press the letter "E" at the very first screen presentation and then follow the screen prompts. Consult the manual for further editing instructions.

On the reverse side of the program diskette are data files on the basic facts mentioned above. Boot Side 1 of Math Blaster!. When the screen display states "Insert the data diskette," the program disk should be removed, turned over, and reinserted. Press the space bar and a menu will appear.

A data diskette has been developed, with activities that correlate to the following skills identified by the E.C.I. for E.S.E. project: P1, P2, PD3, RA1, 21, and MUP1. To use this disk the teacher must start up the Math Blaster! program as usual. The screen directions inform the user to "insert the data diskette". This time insert the separate data diskette labelled E.C.I. for E.S.E. and press the space bar. Press number "6" for Data Disk and a list of the files will be displayed.

Four activities are available to work with each set of data. These include:

LOOK AND LEARN - The math facts from the data disk are given to the student to view. The student does not respond in any way. Facts are presented for no longer than 30 seconds. The display time can be changed by using the left and right arrow keys. The standard time is 4 seconds per problem. Again, this activity only requires the student to watch the screen.

BUILD YOUR SKILL- This activity requires the student to perform the activity (ex. reduce a fraction). The student enters his response and presses Return. To change a response, the back arrow key can be pressed to delete the error. After two mistakes, the answer is given with no strategies for error correction. At the completion of the activity, a scoreboard is given with the following information: elapsed time, number correct, total questions, percentage correct and option to redo missed problems.

CHALLENGE YOURSELF- Problems are presented with a part missing. The student must use his reasoning skills to complete the fact. He enters his response and presses Return. To change a response, the back arrow key can be pressed to delete the error. At the completion of the activity, a scoreboard is given with the following information: elapsed time, number correct, total questions, percentage correct and option to redo missed problems.

MATH BLASTER!- This activity is a fast-action arcade type game that reinforces the facts practiced in the other activities. The object is to shoot a man out of a cannon at the correct answer. The students use the K or L keys (or arrow keys) to move the man left or right, and the Z key to shoot. At the left of the screen is a seal bouncing a ball on his nose. This serves as a timer for each problem. The student must shoot before the ball returns to the seal's nose.

At the right of the screen is a falling balloon. If it touches the needle on the platform, it will pop and end the game. To keep this from happening, move your man over to the far right and have him push the balloon back up in the air again (with the Z key) to keep the game going. The student can choose one of five levels: Regular, Faster, Super, Semi-Pro and Professional.

The student selects an activity (ex. LOOK AND LEARN or BUILD YOUR SKILL) and without pressing the Return key, selects a level (1-5). The levels for addition, subtraction, multiplication, and division are sequential in difficulty.

Addition: Meets Skill A1
Level 1: Sums 2-9 (ex. 4 + 3 = 7)
Level 2: Sums 10-14
Level 3: Sums 15-18
Level 4: Sums 20-100 with addends in multiples of 10
Level 5: Sums 19-25

Subtraction: Meets Skill S1
Level 1: Minuends 8-10 and subtrahends 0-9 (ex. 9 - 7 = 2)
Level 2: Minuends 11-15 and subtrahends 0-5
Level 3: Minuends 11-15 and subtrahends 6-11
Level 4: Minuends 60-100 and subtrahends 20-90; all in multiples of 10 (ex. 70 - 30 = 40)
Level 5: Minuends 15-20 and subtrahends 5-9

Multiplication: Meets Skill M1
Level 1: Multipliers 2-5 and multiplicands 1-5 (4 X 5 = 20)
Level 2: Multipliers 1-5 and multiplicands 6-9
Level 3: Facts from 6 X 0 to 6 X 11 and 7 X 0 to 7 X 11
Level 4: Facts from 8 X 0 to 8 X 11 and 9 X 0 to 9 X 11
Level 5: Facts from 11 X 0 to 11 X 11 and 12 X 0 to 12 X 11

Division: Meets Skill D1
Level 1: Divisors 2-5 and quotients 1-5 (ex. 8 ÷ 4 = 2)
Level 2: Divisors 1-5 and quotients 6-9
Level 3: Divisors 6-7 and quotients 0-11
Level 4: Divisors 8-9 and quotients 0-11
Level 5: Divisors 11-12 and quotients 1-12

Fractions, Decimals and Percents
Level 1: Meets Skill R2
Reducing common fractions (ex. 3/15 = 1/5)
Level 2: Meets Skill C2
Renaming improper fractions (ex. 6/5 = 1 1/5)
*Level 3: Renaming common fractions as decimals (ex. 52/100 = .52 and 203/1000 = .203)
*Level 4: Renaming decimals as percents (.69 = 69% and .135 = 135%)
*Level 5: Renaming percents as fractions (25% = 1/4 and 8 1/3% = 1/12)

*These go beyond the MFMT. (See the data disk which follows: Use Percents as Decimals to replace Level 4 and Percents as Fractions to replace Level 5 if you do not wish to go beyond the MFMT in these areas.)

Functional Math Data Disk for Math Blaster!

Multiply Decimals: Meets Skill MUP 1 (ex. 75% X 12 = 9)
Decimal Zeros: Meets Skill 21 (ex. 3.40 = 3.4)
*Round Tenths: Meets Skill RA1 (ex. 4.45 = 4.6)
*Round Whole Numbers: Meets Skill RA1 (ex. 2.43 = 2)
Percents as Decimals: Meets Skill PD3 (ex 90% = .90)
Percents as Fractions: Meets Skills P1 and P2 (ex. 60% = 3/5)

**Do not use CHALLENGE YOURSELF with these sets of data since students would have to figure out the exact number the rounded off number was coming from.

TEACHER OPTIONS

1. The editor option allows the teacher to generate his or her own problems on a separate data disk. See software manual for details.
2. The sound, disk drive option, display type and timer for LOOK AND LEARN can be selected and altered at the main menu.
3. Pressing the Esc key at any time will end an activity.

SUGGESTIONS

1. Use the left arrow key to delete mistakes.
2. Encourage the students to retake any items missed in the BUILD YOUR SKILL and CHALLENGE YOURSELF activities.
3. The Return key can be used for a fraction bar in activities with fractions.
4. CHALLENGE YOURSELF may not always be appropriate for teacher generated activities.
5. The teacher may want to select the program file and have main menu selections set and ready for the student to choose.
6. Students with short attention spans who are easily distracted should not select the LOOK AND LEARN activity.
7. In dealing with fractions, percents, and decimals, choose the (H) horizontal format in LOOK AND LEARN and BUILD YOUR SKILL.
8. D.T.A. Applications:
    Warm-up
    Independent practice
    Vocabulary: Limited use of words in activities.

Company: Educational
Activities, Inc.
Title: Graphs and Mean,
Median, Mode
Activity: Graphs

SOFTWARE SUMMARY

OBJECTIVES

MFMT: 2.3.2 use Information from Graphs

SKILLS: UG2 IDENTIFY INFORMATION ON A BAR GRAPH
KW1 SELECT KEY WORDS AND PHRASES IN A QUESTION
UG4 IDENTIFY INTERVALS ON HORIZONTAL OR VERTICAL SCALES

ACTIVITY SUMMARY

Graphs, shows students bar graphs concerning various money aspects of five business corporations. Students are asked several questions about each graph. This program provides practice in interpreting bar graphs with the main emphasis on interpolation. There is a bank of graphs which are all set up as horizontal bar graphs. An option of instructions gives students a brief summary on strategies of interpolation and walks them through several examples. Students must type in the numeral answer to each question. Each question must be answered correctly before the next one is asked. There is no limit to the number of attempts to a question. The program does not indicate what the right answer is after several incorrect responses. Each graph's question set takes about 5-8 minutes to complete. Written reinforcement is given after each answer and incorrect answers result in a hint such as: "too large" or "too small." There are no sound effects used in this program.

TEACHER OPTIONS

There are no teacher options available for disk modification.

SUGGESTIONS

1. Make sure students go through the instructions first.
2. Students should have practice in interpolation prior to using this program.
3. Some graph titles may not be understood by all, a brief discussion may be necessary.
4. This program should be used as drill activity.

5. Teacher must have a pre-set plan to deal with students who repeatedly miss a question since the program does not indicate what the right answer is after several incorrect responses. It will accept an infinite number of guesses.
6. There is no closure after answering all of the questions in the bank of graphs. Teachers may have students keep track of how many graphs they complete.
7. D.T.A. Applications:
   Independent Practice
   Vocabulary: interpolation
8. See manual for further information.

SOFTWARE SUMMARY

Company: Educational Activities, Inc.
Title: Graphs and Mean, Median, Mode
Activity: Mean, Median, Mode

OBJECTIVES

MFMT: 2.1.1 Add Whole Numbers
2.1.4 Divide Whole Numbers
2.1.11 Divide Decimals
5.1.1 Find the Average of a set of numbers

SKILLS: A1 RECALL ADDITION NUMBER FACTS
D1 RECALL DIVISION FACTS
MD3 PLACE THE DECIMAL IN THE QUOTIENT CORRECTLY
AV3 FIND THE AVERAGE

ACTIVITY SUMMARY

The Mean, Median, Mode activity groups these concepts together. Students are asked if they would like to see a review. In the review, definitions of mean, median, and mode are given but no procedures or examples are shown. The numbers to be used for each problem are shown in bar graph form in a row with number amounts underneath each bar. The computer asks students what is the mean? (it does not use the word "average") Students will need paper and pencil to figure the mean to the nearest tenth. After the mean answer is typed in, and it is correct, a written reinforcement is given. Then the program asks for the median and mode using the same set of numbers. If the student is incorrect, the program will tell the students to try again. At this point a hint such as, "this time add and divide" is given. After three wrong answers, a correct answer will be given but the procedure is not shown or explained. There are five sets of graphs with numbers given and three problems for each set asking for mean, median and mode.

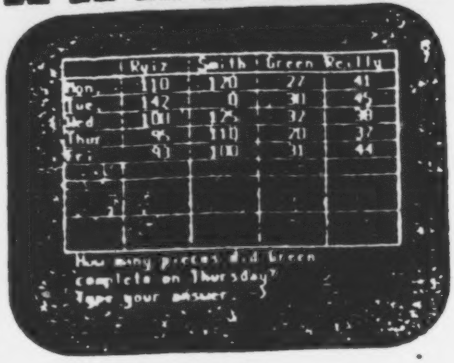
TEACHER OPTIONS

There are no teacher options available for disk modification.

SUGGESTIONS

1. Make sure students go through the instructions first.
2. Students should be aware that mean and average have the same meaning.
3. Students should have paper and pencil to use for computations.
4. Before using this program, students should be familiar with mean, median and mode.
5. D.T.A. Applications:
   Independent Practice

   Vocabulary:
   Mean - average, add up and divide by the number of addends.
   Median - middle number; put the numbers in size order.If there is no middle number, it is the mean of the two middle numbers.
   Mode - the number that appears most often.In case of a tie, there is no mode.
6. See manual for further details.



	Ruiz	Smith	Green	Reilly
Mon.	110	120	27	41
Tue.	142	0	30	45
Wed	100	125	32	38
Thur	95	110	20	37
Fri	93	100	31	44

How many pieces did Green
complete on Thursday?
Type your answer.

SOFTWARE SUMMARY

Company: EDUCATIONAL ACTIVITIES, INC.
Title: MATH FOR EVERYDAY LIVING
Activity: EARNING WITH PIECEWORK OR COMMISSION (Lesson 8)

OBJECTIVES:

MFMT:	2.3.1	Use Information from Tables
	5.1.3	Solve Money Problems Using Multiplication and Division
	5.1.4	Solve Problems Using Percents

SKILLS:	UT1	IDENTIFY INFORMATION ON A TABLE
	UT3	FIND THE POINT AT WHICH THE KEY ROW AND COLUMN INTERSECT TO LOCATE DATA ON A TABLE
	MMD1	SOLVE MONEY PROBLEMS USING MULTIPLICATION AND DIVISION
	PD3	RENAME PERCENTS AS DECIMALS
	MUP1	SOLVE PROBLEMS USING PERCENTS

ACTIVITY SUMMARY

Students are presented with a chart which contains the names of four workers, the days of the week, and the number of pieces each worker completed. First, students read the columns on the chart, both horizontally and vertically, to find the number of pieces completed by a particlular worker on a particular day. After one incorrect response, the two columns flash to show the meeting point or answer.

The student must find the total number of pieces completed by the first worker. A correct response to this addition example will then display the totals for the other workers, while an incorrect response will require the student to add the next worker's total number of pieces. A rate per piece for each worker is then shown. The total income for the first worker is then calculated by multiplying the total number of pieces by the rate per piece. If the student's response is correct, the remaining totals are displayed and the income section ends. Two incorrect responses allow the answer to be displayed, then the student must compute the income of another worker before this section is ended. Finally, commission is defined in a tutorial and presented as a percent. Students must change the percent to a decimal on four practice examples. Given rate of commission as a percentage, and the total sales in a dollar amount, students must find a salesperson's commission in five examples. Incorrect responses are branched into reminders of decimal point placement and the multiplication process.

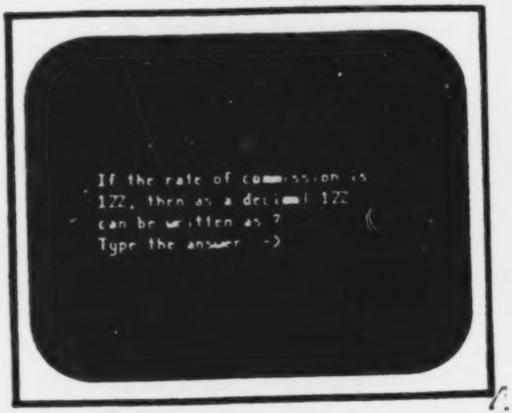
TEACHER OPTIONS

Student scores may be viewed as single scores or as an entire file. To access the scores, type SCORES when the program displays, "Please type in your first name...." As many as 200 students may be maintained at one time. When the disk becomes full, type PURGE when the program displays, "Please type in your first name...." You will then be able to erase an entire student file or purge an individual student from the file.

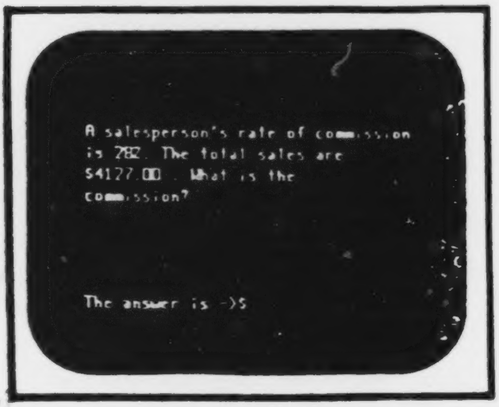
There are no other teacher management options.

SUGGESTIONS

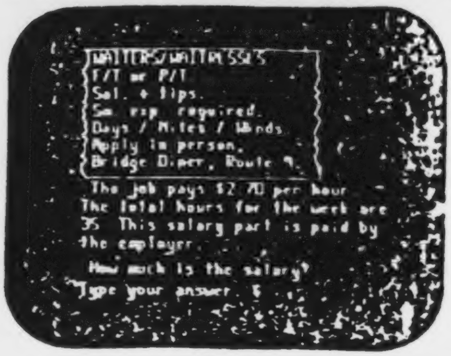
1. Student reading level should be considered before using this program.
2. Use of this program for tables is limited. Only the first section actually reviews a table. The remainder of the program emphasizes multiplying money and changing percent to decimals as they relate to earning with commission.
3. Instruct the student to record his score.
4. D.T.A. Applications:
   Introductory Activity (teacher instructs small group)
   Guided Practice (if reading level is appropriate)
   Independent Practice (if reading level is appropriate)
   Vocabulary: chart--a sheet of information arranged in columns and rows
   piecework--work done and paid for by the piece
   commission--the percentage of work sold that is paid to the worker
   rate--amount or quantity
   percent--per 100, hundredths, or for every 100
   decimal--a number that includes place value positions to the right of the ones place
5. See the program manual for further information.



```
If the rate of commission is
12%, then as a decimal 12%
can be written as ?
Type the answer ->
```



```
A salesperson's rate of commission
is 28%. The total sales are
$4127.00 . What is the
commission?


The answer is ->$
```



WAITERS/WAITRESSES
F/T or P/T
Sal. + tips.
Sm. exp. required.
Days / Nites / Wknds
Apply in person.
Bridge Diner, Route 9.

The job pays $2.70 per hour
The total hours for the week are 35. This salary part is paid by the employer.

How much is the salary?
Type your answer. $

SOFTWARE SUMMARY

Company: EDUCATIONAL ACTIVITIES, INC.
Title: MATH FOR EVERYDAY LIVING
Activity: FINDING YOUR JOB (Lesson 6)

OBJECTIVES:

MFMT: 5.1.2 Solve Money Problems Using Addition and Subtraction
5.1.3 Solving Money Problems Using Multiplication and Division

SKILLS: MAS1 SOLVE MONEY PROBLEMS USING ADDITION AND SUBTRACTION
MMD1 SOLVE MONEY PROBLEMS USING MULTIPLICATION AND DIVISION

ACTIVITY SUMMARY

FINDING YOUR JOB provides students with opportunities to perform addition and multiplication. Students also become familiar with reading and understanding the employment section of the newspaper. The program gives additional practice in reading functional words and abbreviations used in ads that meet objectives in the Maryland Functional Reading Test. The reading level appears to be 4th to 6th grade level.

Students are presented with five problems where they must select a job of interest and figure out the total money earned weekly from the hours given. Two chances are given to answer correctly before the correct answer is given. Then a help-wanted ad is shown which offers salary plus tips. A sequential example is given where the student (a) figures the salary by multiplying the hours by the per-hour salary, (b) adds the tips for one week, and (c) adds the tips and the salary to get the total salary amount. Pencil and paper are required for the computation.

Students may experience difficuly reading and computing with paper and pencil. The teacher needs to monitor student responses and level of frustration.

Sound is used in the activity.

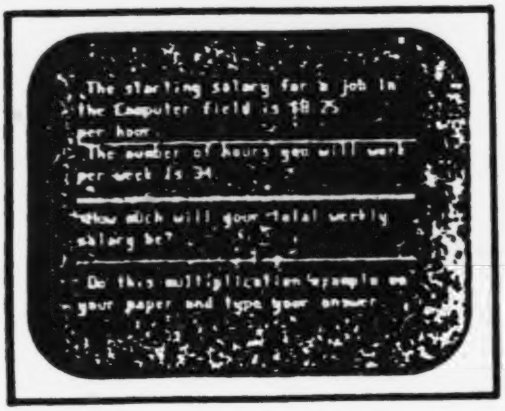
TEACHER OPTIONS

Student scores may be viewed as single scores or as an entire file. To access the scores, type SCORES when the program displays, "Please type in your first name...." As many as 200 students may be maintained at one time. When the disk becomes full, type PURGE when the program displays, "Please type in your first name...." You will then be able to erase an entire student file or purge an individual student from the file.

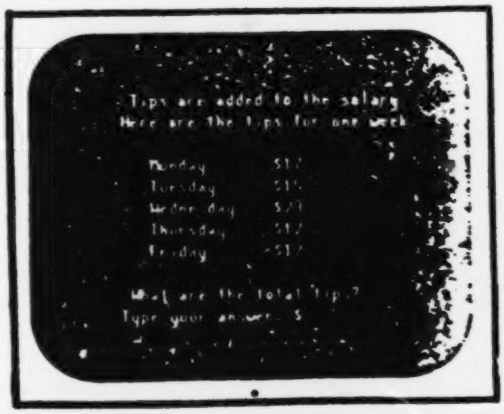
There are no other teacher management options.

SUGGESTIONS

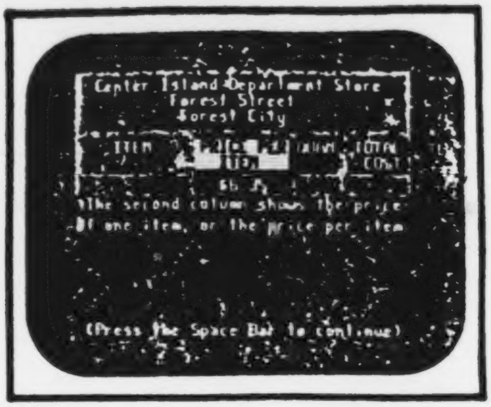
1. Student reading level should be considered before using this program.
2. Teacher made worksheets or actual help-wanted ads may be used to motivate students.
3. Instruct the student to record his score.
4. D.T.A. Applications:
    Introductory Activity (teacher instructs small group)
    Guided Practice (if reading level is appropriate)
    Independent Practice (if reading level is appropriate)
    Vocabulary: min. (minimum), yrs. (years), excel. (excellent), exp. (experience), oppty. (opportunity), F/T or P/T (full-time or part-time), sal. (salary), benefits
5. See the program manual for further information.



```
The starting salary for a job in
the Computer field is $8.25
per hour.
The number of hours you will work
per week is 34.

How much will your total weekly
salary be?

Do this multiplication example on
your paper and type your answer.
```



```
Tips are added to the salary.
Here are the tips for one week.

   Monday        $17
   Tuesday       $15
   Wednesday     $23
   Thursday      $12
   Friday        $17

What are the total tips?
Type your answer. $
```



Center Island Department Store
Forest Street
Forest City

ITEM PRICE PER ITEM QUAN. TOTAL COST

The second column shows the price of one item, or the price per item.

(Press the Space Bar to continue)

SOFTWARE SUMMARY

Company: EDUCATIONAL ACTIVITIES, INC.
Title: MATH FOR EVERYDAY LIVING
Activity: GOING SHOPPING (Lesson 2)

OBJECTIVES:

MFMT: 5.1.3 Solve Money Problems Using Multiplication and Division

SKILLS: KW2 SELECT AN OPERATION FROM KEY WORDS AND PHRASES
MMD1 SOLVE MONEY PROBLEMS USING MULTIPLICATION AND DIVISION

ACTIVITY SUMMARY

GOING SHOPPING provides students with opportunities to recognize price per item and compute the total cost on a bill. The program gives additional practice in reading functional words and phrases that meet objectives in the Maryland Functional Reading Test. Reading level appears to be 4th to 6th grade level.

Students compute the total cost of selected items on a sales slip after indicating whether they must subtract, multiply, or divide. Pencil and paper are required for the computation. Two chances are given to compute the bill before the correct answer is given. If errors are made, the program branches to a tutorial that will review multiplication and grouping. There are ten problems in the lesson.

Students may experience difficuly reading and computing with paper and pencil. The teacher needs to monitor student responses and level of frustration.

Sound is used in the activity.

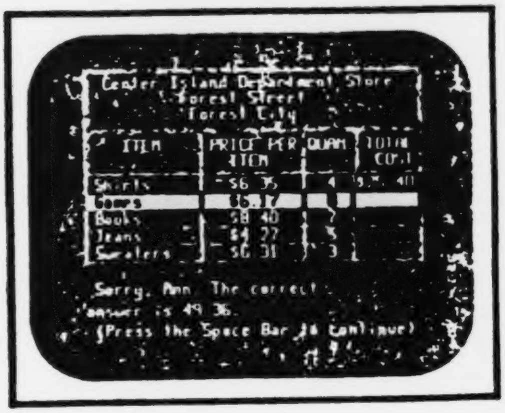
TEACHER OPTIONS

Student scores may be viewed as single scores or as an entire file. To access the scores, type SCORES when the program displays, "Please type in your first name...." As many as 200 students may be maintained at one time. When the disk becomes full, type PURGE when the program displays, "Please type in your first name...." You will then be able to erase an entire student file or purge an individual student from the file.

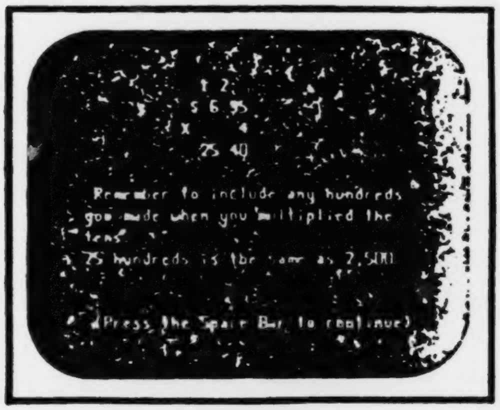
There are no other teacher management options.

SUGGESTIONS

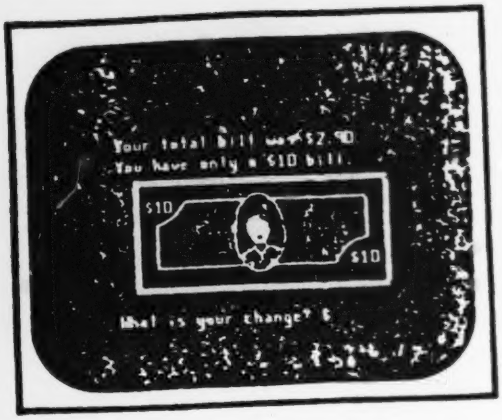
1. Student reading level should be considered before using this program.
2. Teacher made worksheets or actual sales slips may be used to motivate students.
3. Instruct the student to record his score.
4. D.T.A. Applications:
   - Introductory Activity (teacher instructs small group)
   - Guided Practice (if reading level is appropriate)
   - Independent Practice (if reading level is appropriate)
   - Vocabulary: sales slip, item, price per item, quan. (quantity), total cost, column
5. See the program manual for further information.



```
     Center Island Department Store
            Forest Street
             Forest City

   ITEM     | PRICE PER | QUAN | TOTAL
            |   ITEM    |      | COST
 Shirts     |   $6.35   |   4  | $25.40
 Gears      |   $6.17   |      |
 Books      |   $8.40   |   2  |
 Jeans      |   $4.27   |   5  |
 Sweaters   |   $6.31   |   3  |

 Sorry, Ann. The correct
 answer is 49.36.
 (Press the Space Bar to continue)
```



```
       1 2
     $ 6.35
   x      4
     25.40

 Remember to include any hundreds
 you made when you multiplied the
 tens.
 25 hundreds is the same as 2,500

 (Press the Space Bar to continue)
```


Your total bill was $2.90
You have only a $10 bill.
What is your change? $

SOFTWARE SUMMARY

Company: EDUCATIONAL ACTIVITIES, INC.
Title: MATH FOR EVERYDAY LIVING
Activity: PAYING FOR A MEAL (Lesson 1)

OBJECTIVES:

MFMT: 5.1.2. Solve Money Problems Using Addition and Subtraction
5.1.5 Make Change

SKILLS: KW2 SELECT AN OPERATION FROM KEY WORDS OR PHRASES
MC2 WRITE ONE, FIVE, TEN AND TWENTY DOLLAR BILLS AS $1.00, $5.00, $10.00, AND $20.00
MAS1 SOLVE MONEY PROBLEMS USING ADDITION AND SUBTRACTION

ACTIVITY SUMMARY

PAYING FOR A MEAL provides students with opportunities to select food items from a menu and compute the bill. Students select a sandwich, side order, dessert and beverage and are asked to compute their bill. Pencil and paper are required for the computation. Then they are asked to make change from given bills.

Two chances are given to compute the bill before the correct answer is given. If errors are made in making change, the program branches to a tutorial that will review subtraction with regrouping.

Students may experience difficuly reading and computing with paper and pencil. The teacher needs to monitor student responses and level of frustration.

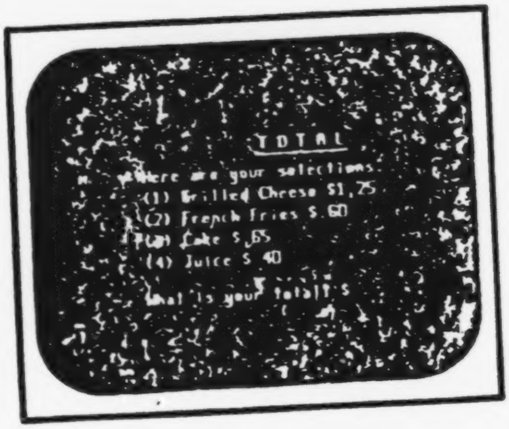
TEACHER OPTIONS

Student scores may be viewed as single scores or as an entire file. To access the scores, type SCORES when the program displays, "Please type in your first name...." As many as 200 students may be maintained at one time. When the disk becomes full, type PURGE when the program displays, "Please type in your first name...." You will then be able to erase an entire student file or purge an individual student from the file.

There are no other teacher management options.

SUGGESTIONS

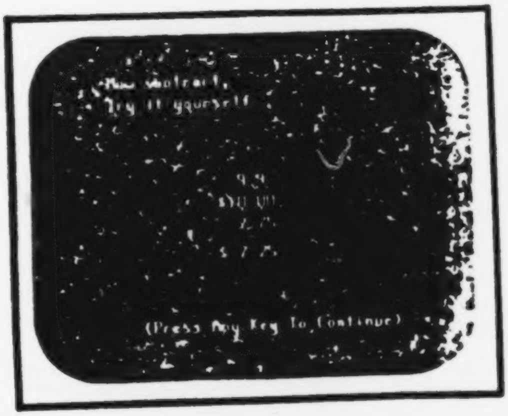
1. Student reading level should be considered before using this program.
2. Teacher made worksheets or actual fast food menus may be used to motivate students.
3. Instruct the student to record his score.
4. D.T.A. Applications:
   Introductory Activity (teacher instructs small group)
   Guided Practice (if reading level is appropriate)
   Independent Practice (if reading level is appropriate)
   Vocabulary: menu, sandwiches, side orders, desserts, beverages, (check the food items on the program to see if they also need to be taught), regroup, column
5. See the program manual for further information.



TOTAL

Here are your selections:
(1) Grilled Cheese $1.75
(2) French Fries $.60
(3) Cake $.65
(4) Juice $.40

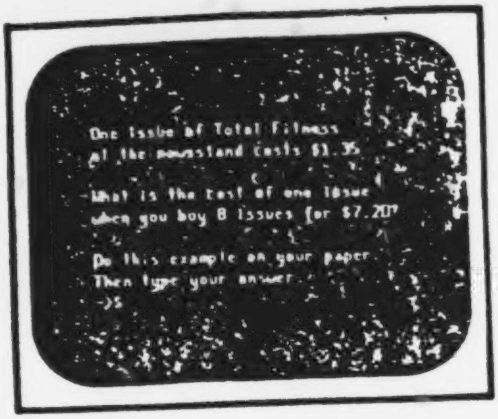
What is your total? $



Now subtract.
Try it yourself

(Press Any Key To Continue)

SOFTWARE SUMMARY



```
One issue of Total Fitness
at the newsstand costs $1.35

What is the cost of one issue
when you buy 8 issues for $7.20?

Do this example on your paper.
Then type your answer.
->$
```

Company: EDUCATIONAL ACTIVITIES, INC.
Title: MATH FOR EVERYDAY LIVING
Activity: UNIT PRICING (Lesson 3)

OBJECTIVES:

MFMT: 5.1.2 Solve Money Problems Using Addition and Subtraction
5.1.3 Solve Money Problems Using Multiplication and Division

SKILLS: KW2 SELECT AN OPERATION FROM KEY WORDS AND PHRASES
MAS1 SOLVE MONEY PROBLEMS USING ADDITION AND SUBTRACTION
MMD1 SOLVE MONEY PROBLEMS USING MULTIPLICATION AND DIVISION

ACTIVITY SUMMARY

UNIT PRICING provides students with opportunities to recognize unit price and practice division and subtraction. The program gives additional practice in reading functional words and phrases that meet objectives in the Maryland Functional Reading Test. The reading level appears to be 4th to 6th grade level.

Students must indicate the proper operation (addition, subtraction, multiplication or division) for a word problem at the beginning of the activity. Then they are presented with a subscription offer to a magazine, with a specific amount of issues for a special price. They are also given the per-issue newsstand price. First they are asked to find the cost of one issue at the subscription price. After two incorrect responses, the program branches to a step-by-step division tutorial. Then they are asked to find the difference between the newsstand price and the subscription price. After two incorrect answers, the subtraction example and answer are displayed. Pencil and paper are required for the computation. There are 17 problems in the lesson.

Students may experience difficuly reading and computing with paper and pencil. The teacher needs to monitor student responses and level of frustration.

Sound is used in the activity.

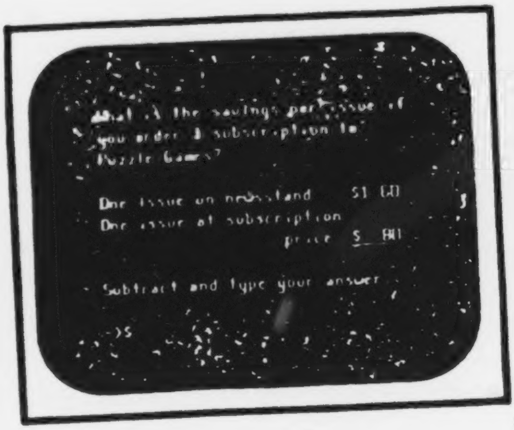
TEACHER OPTIONS

Student scores may be viewed as single scores or as an entire file. To access the scores, type SCORES when the program displays, "Please type in your first name...." As many as 200 students may be maintained at one time. When the disk becomes full, type PURGE when the program displays, "Please type in your first name...." You will then be able to erase an entire student file or purge an individual student from the file.

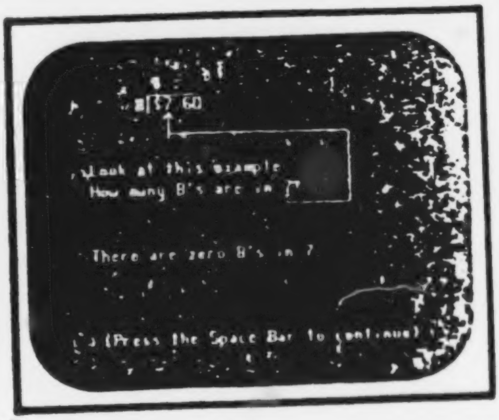
There are no other teacher management options.

SUGGESTIONS

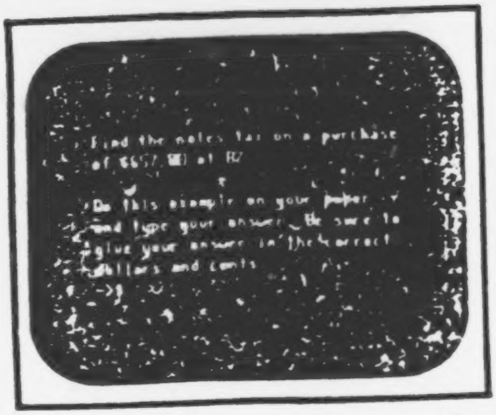
1. Student reading level should be considered before using this program.
2. Teacher made worksheets or actual advertisements may be needed to motivate students.
3. Instruct the student to record his score.
4. D.T.A. Applications:
    Introductory Activity (teacher instructs small group)
    Guided Practice (if reading level is appropriate)
    Independent Practice (if reading level is appropriate)
    Vocabulary: unit price, advertisement (ad), subscription
5. See the program manual for further information.



```
What is the savings per issue if
you order a subscription to
Puzzle Games?

One issue on newsstand     $1.00
One issue at subscription
                    price  $ .80

Subtract and type your answer

-->$
```



```
8)$7.60

Look at this example.
How many 8's are in 7?

There are zero 8's in 7.

(Press the Space Bar to continue)
```



Find the sales tax on a purchase of $657.[illegible] at [illegible]

Do this example on your paper and type your answer. Be sure to give your answer in the correct dollars and cents.

->$

SOFTWARE SUMMARY

Company: EDUCATIONAL ACTIVITIES, INC.
Title: MATH FOR EVERYDAY LIVING
Activity: WORKING ON SALES TAX
(Lesson 5)

OBJECTIVES:

MFMT: 5.1.4 Solve Problems Using Percents
4.1.1 Choose a Reasonable Answer for a Mathematical Problem

SKILLS:	
PD3	RENAME PERCENTS AS DECIMALS
MD1	IDENTIFY THE NUMBER OF DECIMAL PLACES IN THE PRODUCT
MD3	PLACE THE DECIMAL POINT IN THE PRODUCT CORRECTLY WITH UP TO THREE OR FOUR DECIMAL PLACES
Z1	RECOGNIZE THAT WITH ANY DECIMAL ENDING IN ZERO(S), THE ZERO(S) MAY BE DROPPED
RA1	ROUND OFF NUMBERS
MUP1	SOLVE PROBLEMS USING PERCENTS
KW2	SELECT AN OPERATION FROM KEY WORDS OR PHRASES

ACTIVITY SUMMARY

WORKING ON SALES TAX helps students learn how to compute sales tax on purchases through a series of steps. First, sales tax is given as a percent, and the student must type in the percent as a decimal. Then a step-by-step tutorial shows how to find 6% sales tax on a purchase of $12.50. The tutorial takes into account placement of both decimal point and dollar sign in an answer. Students are then presented with answers to multiplication examples involving sales tax, and learn how to round off to the nearest cent. Finally five random problems are presented. After two incorrect responses, the program branches to the in-depth tutorial presented earlier in the lesson.

The program gives additional practice in reading functional words and phrases that meet objectives in the Maryland Functional Reading Test. The reading level appears to be 4th to 6th grade level.

Students may experience difficuly reading and computing with paper and pencil. The teacher needs to monitor student responses and level of frustration.

Sound is used in the activity.

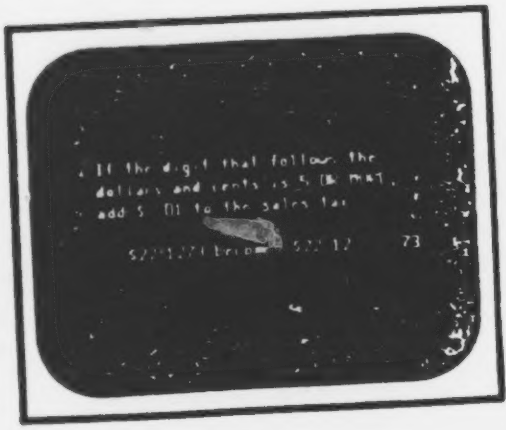
TEACHER OPTIONS

Student scores may be viewed as single scores or as an entire file. To access the scores, type SCORES when the program displays, "Please type in your first name...." As many as 200 students may be maintained at one time. When the disk becomes full, type PURGE when the program displays, "Please type in your first name...." You will then be able to erase an entire student file or purge an individual student from the file.

There are no other teacher management options.

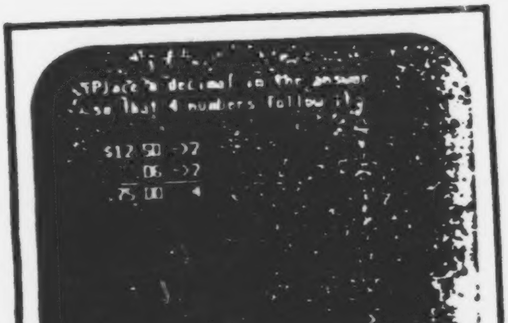
SUGGESTIONS

1. Student reading level should be considered before using this program.
2. Teacher made worksheets or newspaper ads in which students choose items and compute sales tax may be used to motivate students.
3. Instruct the student to record his score.
4. D.T.A. Applications:
   Introductory Activity (teacher instructs small group)
   Guided Practice (if reading level is appropriate)
   Independent Practice (if reading level is appropriate)
   Vocabulary: sales tax, decimal, percent, digit
5. See the program manual for further information.



If the digit that follows the dollars and cents is 5 OR MORE, add $.01 to the sales tax.

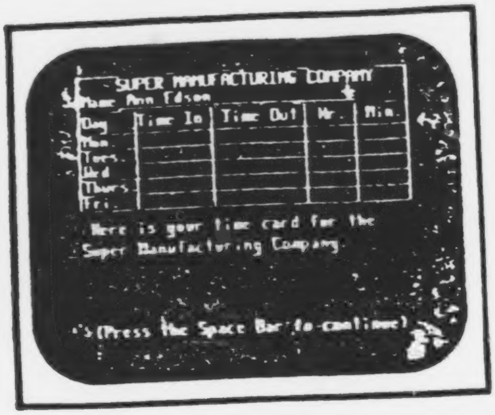
$22.1273 [illegible] $22.12 73



Place a decimal in the answer so that 4 numbers follow it.

```
$12.50 ->2
   .06 ->2
 75.00   4
```

(Press the Space Bar to continue)


SUPER MANUFACTURING COMPANY

Name Ann Edson

Day	Time In	Time Out	Hr.	Min.
Mon.				
Tues.				
Wed				
Thurs.				
Fri.				

Here is your time card for the Super Manufacturing Company.

(Press the Space Bar to continue)

SOFTWARE SUMMARY

Company: EDUCATIONAL ACTIVITIES, INC.
Title: MATH FOR EVERYDAY LIVING
Activity: WORKING WITH TIME (Lesson 9)

OBJECTIVES:

MFMT: 2.3.1 Using Information from Tables
5.1.6 Find Elapsed Time

SKILLS: UT1 IDENTIFY INFORMATION ON A TABLE
MET2 RECALL THAT 60 MINUTES EQUALS 1 HOUR
MET9 FIND ELAPSED TIME

ACTIVITY SUMMARY

WORKING WITH TIME teaches basic addition and subtraction of time through working with time clock tables. Students first learn about time clocks and time cards. Then a sample time card is displayed with the student's name, along with Time In, Time Out, Hour and Minute columns and five days of the week. The Time In and Time Out hours are filled in for the first day, and the student is asked to compute hours worked. Correct responses are rewarded in writing, while an incorrect response branches the student to an example which shows how the hours are computed.

After computing the hours and minutes for all 5 days, the student is asked to a) total the hours and minutes for the week and b) correct minutes into hours for the total time worked. A second incorrect response will branch the student to a brief tutorial frame which shows how this is done. Two different time cards are presented for a total of 17 problems. The percent correct is indicated at the end for the entire lesson. There is a limited use of sound effects.

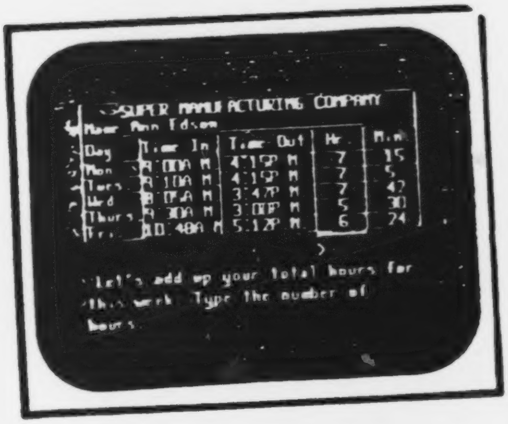
TEACHER OPTIONS

Student scores may be viewed as single scores or as an entire file. To access the scores, type SCORES when the program displays, "Please type in your first name...." As many as 200 students may be maintained at one time. When the disk becomes full, type PURGE when the program displays, "Please type in your first name...." You will then be able to erase an entire student file or purge an individual student from the file.

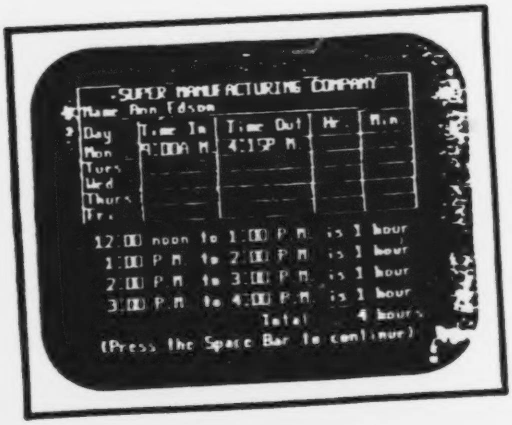
There are no other teacher management options.

SUGGESTIONS

1. Student reading level should be considered before using this program.
2. Pencil and paper may be needed to aid in calculations.
3. The program does not generate new problems, so it cannot be used again without reworking the same 17 problems.
4. Instruct the student to record his score.
5. D.T.A. Applications:
    Introductory Activity (teacher instructs small group)
    Guided Practice (if reading level is appropriate)
    Independent Practice (if reading level is appropriate)
    Vocabulary: salary, time clock, time card, time in, time out, hr., min., A.M., P.M.
6. See manual for further information.



```
 SUPER MANUFACTURING COMPANY
Name Ann Edson
Day    Time In   Time Out  Hr.  Min.
Mon    9:00A M   4:15P M    7    15
Tues   9:10A M   4:15P M    7     5
Wed    8:05A M   3:47P M    7    42
Thurs  9:30A M   3:00P M    5    30
Fri.  10:48A M   5:12P M    6    24
                           >
Let's add up your total hours for
this week. Type the number of
hours.
```



```
 SUPER MANUFACTURING COMPANY
Name Ann Edson
Day    Time In   Time Out  Hr.  Min.
Mon    9:00A M   4:15P M.
Tues
Wed
Thurs
Fri.
 12:00 noon to 1:00 P.M. is 1 hour
  1:00 P.M.  to 2:00 P.M. is 1 hour
  2:00 P.M.  to 3:00 P.M. is 1 hour
  3:00 P.M.  to 4:00 P.M. is 1 hour
                   Total    4 hours
(Press the Space Bar to continue)
```

SOFTWARE SUMMARY

Company: EDUCATIONAL ACTIVITIES, INC.
Title: SALINA MATH GAMES
Activity: ROUND TABLE
(Diskette #1)

OBJECTIVES:

MFMT: 3.1.1 Write numbers in words and digits
4.1.1 Choose a reasonable answer for a mathematical problem

SKILLS:
N1 IDENTIFY PLACE VALUE
N2 IDENTIFY WORD NAMES ONE THROUGH NINETEEN
N4 IDENTIFY WORD NAMES FOR 20, 30, 40...90
N6 IDENTIFY HYPHENATED NUMBER WORDS FOR 21, 22, 23...99
N8 IDENTIFY THE WORD NAMES FOR 100 AND 1,000
N10 IDENTIFY THE WORD NAMES FOR TENTHS AND HUNDREDTHS FROM THE DIGITS (.1-.01)
RA1 ROUND OFF NUMBERS

ACTIVITY SUMMARY

Most of the games in this series allow students to try optional student tutorials to become more familiar with the concepts presented. The instructions give the students the procedure for rounding numbers. Students should be encouraged to review the instructions.

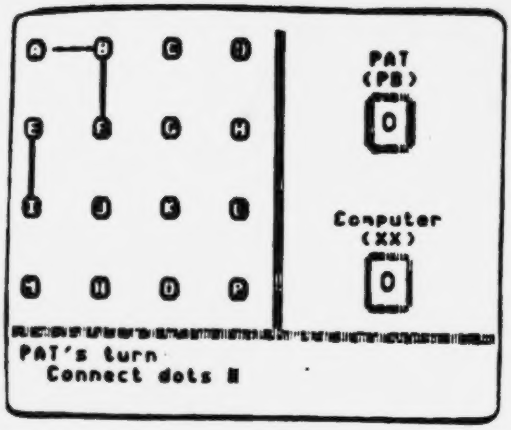
ROUND TABLE is a game for two players. It gives practice in rounding off numbers, both whole and decimal. Both players are given numbers they must round to the nearest thousand, hundred, ten, tenth, hundredth, thousandth. One player works on a problem at a time. Both players get a choice of three levels of difficulty on each problem. The higher level of difficulty chosen by a player, the more points that player can score. Two people seated at a table smile or frown in response to the student's answer. When an incorrect answer is given, the correct answer appears on the screen. The first player to accumulate 30 points is the winner.

TEACHER OPTIONS

Each diskette contains a record of the students who have attempted and/or successfully completed each lesson on that diskette. These scores can be displayed individually, or by total class. The program will also give the option of viewing these results on the screen or having them printed out.

SUGGESTIONS

1. Students will need teacher directed lessons before they can successfully complete this game.
2. This program may be used as a drill.
3. DTA Appplications:
   Independent Practice
   Vocabulary: rounding nunbers--replacing specific numbers with
   numbers expressed in even units such
   as ten, hundred, or thousand
   tenth--.1
   hundredth--.01
   thousandth.001
4. See the program manual for further information.



PAT's turn
Connect dots

SOFTWARE SUMMARY

Company: MECC A-125
Title: Addition Logician
Activity: THE FENCE GAME

OBJECTIVES:

MFMT 2.1.1 Add Whole Numbers
SKILL: *ADD USING FOUR ADDENDS WITH TWO OR MORE REGROUPINGS
*This skill is not included in the MFMT

ACTIVITY SUMMARY

The first screen presentation is "The Fence Game." The students are given the question "Do you want instructions?." If they type in yes, they are given a demonstration of how to play the game.

The students are then presented with 12 whole number addition problems having four two digit addends. Each problem requires regrouping of a "2" or a "3". After successfully completing three problems, the student plays a portion of "The Fence Game." The numbers used are randomly selected so each student is assured a unique set of problems.

The student answers the problems by entering the ones, then tens, then hundreds column answer. They do not press "Return" after each response and do not enter in the carry number.

For a correct response the word "RIGHT" appears at the bottom of the screen, and then a new problem is immediately presented.

For an incorrect response "NO, TRY AGAIN" appears at the bottom of the screen. After a second attempt the student is prompted with a pink rectangular box around the two numbers that should be added. There is also a question mark at the bottom where the answer should be placed. The student enters an answer and then is prompted with the box over the tens column with a question mark in the space where the carry number should be entered. (Now the student enters the carry.) The student enters the carry number then the answer and the prompt continues to the hundreds column. If the student continues to make errors the program responds with "NO, TRY AGAIN" until the correct number is entered.

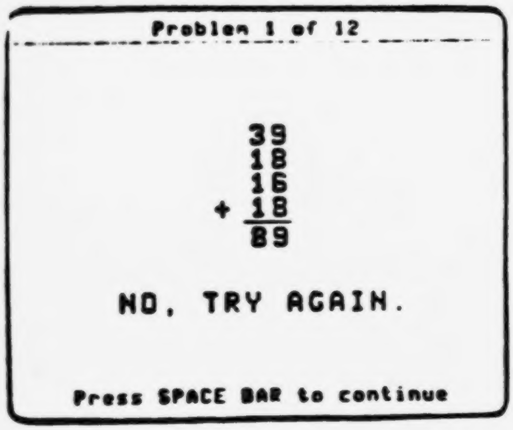
When the graphics are turned "on" the student will work on three problems, then play the "The Fence Game." This game is a version of Connect The Dots", where the student takes turns with the computer connecting points. One point is scored for completing the fence around one of the small square regions. The player with the most points at the end of the game wins.

At the end of each lesson the students are presented with a scoring frame. If they score at or above mastery level (75%) they are congratulated.

Ex. You did 12 problems.
You got 11 problems right on the first try.
VERY GOOD!!
You are ready for REPEAT AFTER ME.

If they score below mastery level, they are encouraged to repeat the program.

Ex. You did 12 problems.
You got 7 problems right on the first try..
Please try THE FENCE GAME again.

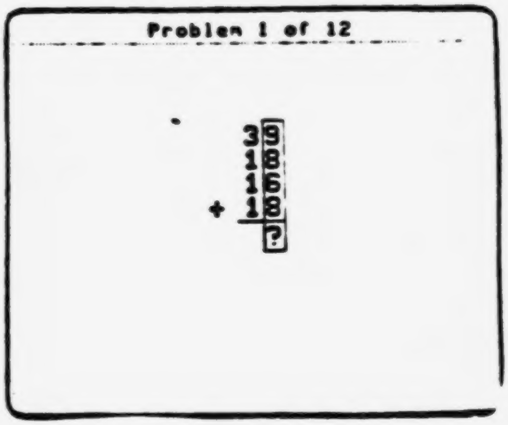


Problem 1 of 12

```
   39
   18
   16
 + 18
   89
```

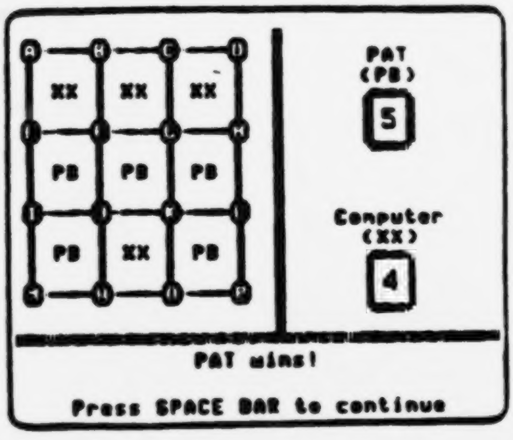
NO, TRY AGAIN.

Press SPACE BAR to continue



Problem 1 of 12

```
   39
   18
   16
 + 18
    ?
```



PAT
(PB)
5

Computer
(XX)
4

PAT wins!

Press SPACE BAR to continue

TEACHER OPTIONS

1. The sound can be turned "off" or "on" at the main menu only.

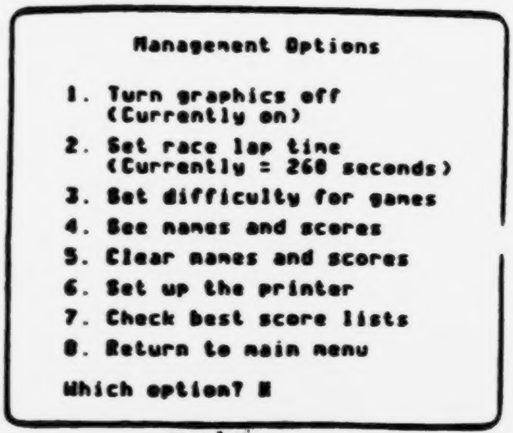
2. Press Control-A to get into the teacher management at the main menu. (See "How to Modify the Disk" in the Teachers Manual)
   - A. Select number 1, then return, to turn the graphics "off" or "on". It will say that they are currently "on" or "off" on the options screen.
   - B. Select number 3, then return, to change the difficulty level of the game. Follow the directions on the screen. The levels can be: easy, medium or hard.
   - C. Other options available to the teacher are: See names and scores, Clear names and scores, Set the printer, and Check the best score. The screen directions are self explanatory.

SUGGESTIONS

1. For this activity the sound is "on" during the game section only. If it is distracting to the rest of the class turn it "off". If it is not distracting, it can be entertaining to the student playing the game.

2. D.T.A. Applications
   Warm-up
   Guided Practice
   Independent Practice
   Vocabulary: None

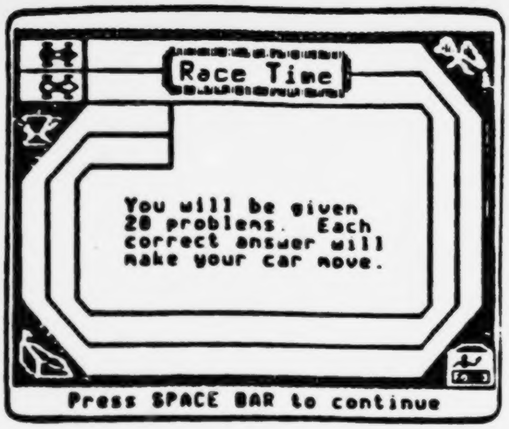
3. Turn the graphics "off" (at the main menu #7) if the student takes more time on the game than necessary or if the game seems to break up the learning activity.



Management Options

1. Turn graphics off
   (Currently on)
2. Set race lap time
   (Currently = 260 seconds)
3. Set difficulty for games
4. See names and scores
5. Clear names and scores
6. Set up the printer
7. Check best score lists
8. Return to main menu

Which option? █



Race Time

You will be given 20 problems. Each correct answer will make your car move.

Press SPACE BAR to continue

SOFTWARE SUMMARY

Company: MECC A-125
Title: Addition Logician
Activity: RACE TIME

OBJECTIVES:
MFMT 2.1.1 Add Whole Numbers
SKILL: A6 ADD TWO NUMBERS WITH UP TO 2 DIGITS EACH, REGROUPING ONES TO TENS
A7 ADD TWO NUMBERS WITH UP TO 3 OR 4 DIGITS EACH, REGROUPING ONES TO TENS
A10 ADD TWO NUMBERS WITH UP TO 4 DIGITS EACH, 1 TO 3 REGROUPINGS
A11 ADD THREE NUMBERS WITH UP TO 2 DIGITS EACH, REGROUPING.

ACTIVITY SUMMARY

The first screen presentation is the "Race Time's" best times list. The students are given these instructions: "You will be given 20 problems. Each correct answer will make your car move." The students are then prompted to press the space bar and the race begins. The race time can be adjusted by using the management options. The program's race time is 260 seconds. The clock is not visible to the student while the race is going on.

The students are then presented with 20 whole number addition problems. Each problem requires regrouping.

The students answer the problems by entering the ones, then tens, then hundreds column answer. They do not press return after each response and do not enter in the carry number.

For a correct response the word "RIGHT" appears at the bottom of the screen, and then a new problem is immediately presented.

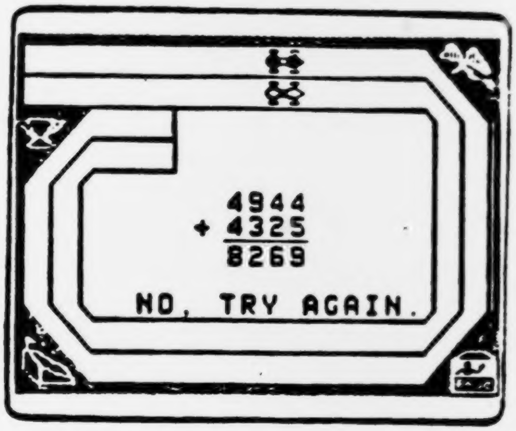
For an incorrect response the "NO, TRY AGAIN" appears. After a second attempt the student is prompted with a pink rectangular box around the two numbers that should be added. There is also a question mark at the bottom where the answer should be placed. The student enters an answer and then is prompted with the box over the tens column with a question mark in the space where the carry number should be entered. (Now the student enters the carry.) The student enters the carry number then the answer and the prompt continues to the hundreds column. If the student continues to make errors the program responds with "NO, TRY AGAIN" until the correct number is entered.

After successfully completing all 20 problems before the clock runs out, the students see:

EX. The winner is "___________"!!!
Your time was "__________"
OR
You did 20 problems .
You got 13 problems right on the first try.
Please try RACE TIME again.

If the student's end time is within the top ten best times, he/she will see their name on the "best times" list.

When the graphics are turned "off" the clock will be turned "off" and the drill is not timed. This allows the student to take as long as necessary to perform the problems.



```
  4944
+ 4325
  8269
NO, TRY AGAIN.
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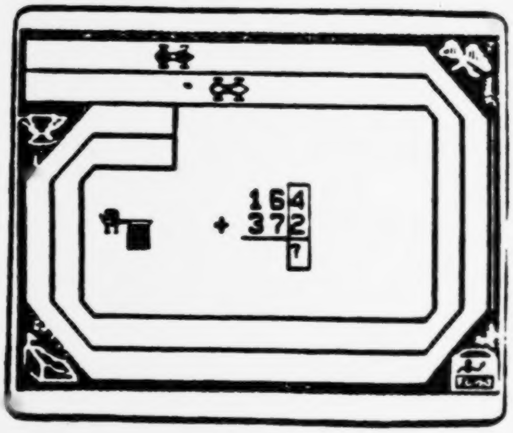


```
  164
+ 372
    ?
```

TEACHER OPTIONS

1. The sound can be turned "off" or "on" at the main menu only.

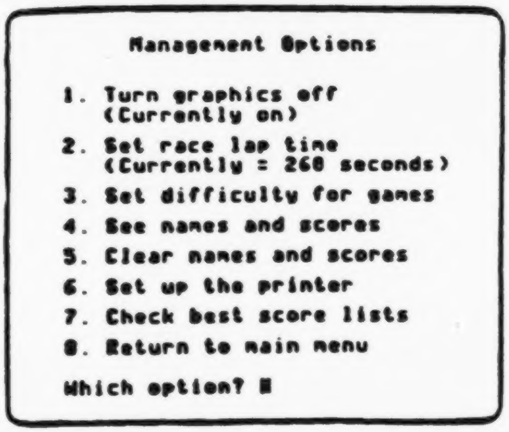
2. Press Control-A to get into the teacher management at the main menu.
   - A. Select number 1, then Return, to turn the graphics "off" or "on". It will say that they are currently on or off on the options screen. Turning the graphics "off" will turn RACE TIMES clock off.
   - B. Select number 2, then return, to change the race time. Enter the new time in multiples of 20, press Return.
   - C. Other options available to the teacher are: See names and scores, Clear names and scores, Set the printer, and Check the best score. The screen directions are self explanatory.

SUGGESTIONS

1. D.T.A. Applications
   Warm-up
   Guided Practice
   Independent Practice
   Vocabulary: None

2. Leave the graphics "on" for a timed drill of all the skills. Turn the graphics "off" for an untimed drill review of all the skills.

3. See the MECC manual for further information.



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Management Options

1. Turn graphics off
   (Currently on)
2. Set race lap time
   (Currently = 260 seconds)
3. Set difficulty for games
4. See names and scores
5. Clear names and scores
6. Set up the printer
7. Check best score lists
8. Return to main menu

Which option? ■
```
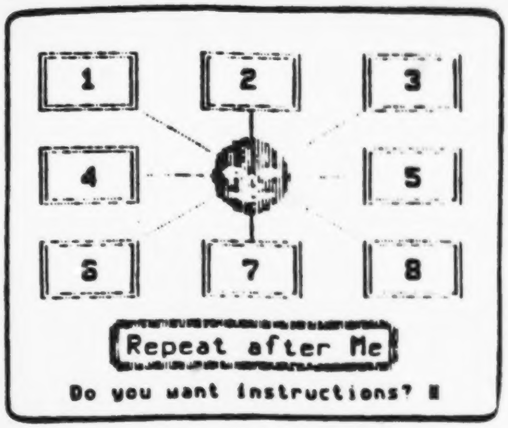



Do you want instructions? ■

SOFTWARE SUMMARY

Company: MECC A-125
Title: Addition Logician
Activity: REPEAT AFTER ME

OBJECTIVES:
MFMT 2.1.1 Add Whole Numbers
SKILL: A8 ADD TWO NUMBERS WITH UP TO 3-DIGITS EACH, REGROUPING TENS TO HUNDREDS
A10 ADD TWO NUMBERS WITH UP TO 4 DIGITS EACH, 1-3 REGROUPINGS
A12 ADD THREE NUMBERS WITH UP TO 3 OR 4 DIGITS EACH, REGROUPING

ACTIVITY SUMMARY

Students are presented with the "Repeat After Me Game." They are given the question "Do you want instructions?". If they type in yes, they are given a demonstration of how to play the game.

The students are then presented with 25 whole number addition problems with 3-4 digit addends and regrouping. Each problem requires regrouping. After successfully completing five problems, the student plays a portion of "Repeat After Me." The numbers used are randomly selected so each student is assured a unique set of problems.

The student answers the problems by entering the ones, then tens, then hundreds column answer. They do not press "Return" after each response and do not enter in the carry number.

For a correct response the student sees the word "RIGHT" at the bottom of the screen, and then a new problem is immediately presented.

For an incorrect response "NO, TRY AGAIN" appears at the bottom of the screen. After a second attempt the student is prompted with a pink rectangular box around the two numbers that should be added. There is also a question mark at the bottom where the answer should be placed. The student enters an answer and then is prompted with the box over the tens column and a question mark in the space where the carry number should be entered. (Now the student enters the carry.) The student enters the carry number then the answer and the prompt continues to the hundreds column. If the student continues to make errors the program responds with "NO, TRY AGAIN" until the correct number is entered.

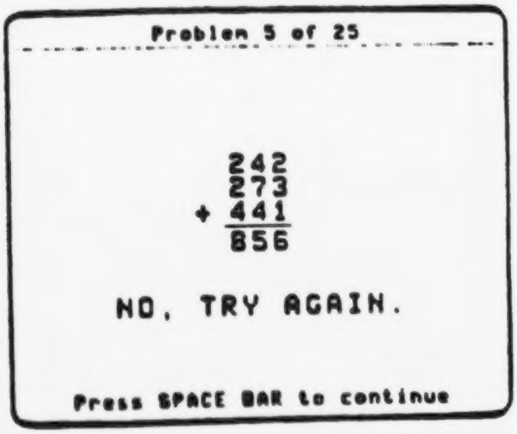
When the graphics are turned on the student will work on five problems, then play the "Repeat After Me" game. This game is a version of the electronic game "Simon." After a series of notes is repeated correctly, a new note is added and the student tries to repeat this new series. If enough notes are repeated, the student's name is placed on the "Top ten scores" list.

At the end of each lesson the students are presented with a scoring frame. If they score at or above mastery level (80%) they are congratulated.

Ex. You did 25 problems.
You got 25 problems right on the first try.
TERRIFIC!!
You are ready for RACE TIME.

If they score below mastery level, they are encouraged to repeat the program.

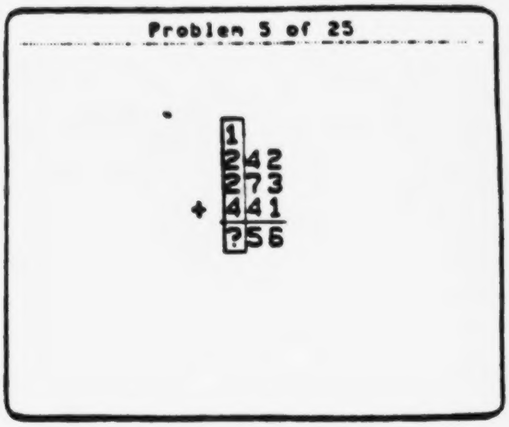
Ex. You did 25 problems.
You got 15 problems right on the first try..
Please try REPEAT AFTER ME again.


Problem 5 of 25

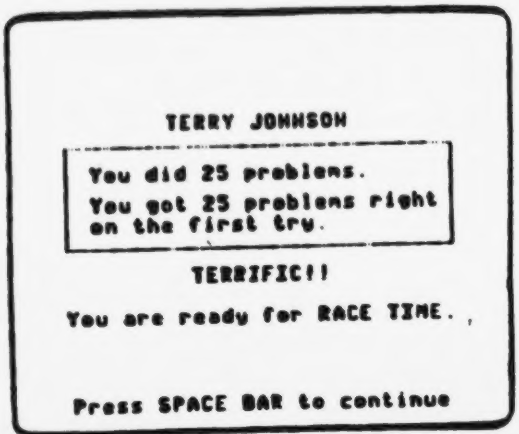
242
273
+ 441
856

NO, TRY AGAIN.

Press SPACE BAR to continue


Problem 5 of 25

1
242
273
+ 441
?56


TERRY JOHNSON

You did 25 problems.

You got 25 problems right on the first try.

TERRIFIC!!

You are ready for RACE TIME.

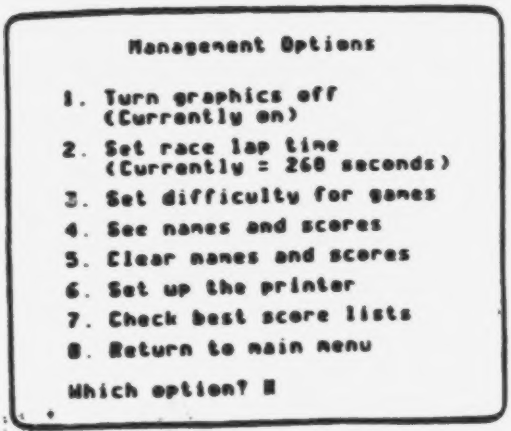
Press SPACE BAR to continue

TEACHER OPTIONS

1. The sound can be turned "off" or "on" at the main menu only.
2. Press Control-A to get into the teacher management at the main menu.
   A. Select number 1, then Return, to turn the graphics "off" or "on".
   B. Select number 3, then Return, to change the difficulty level of the game. Follow the directions on the screen. The levels can be: easy, medium or hard.
   C. Other options available to the teacher are: See names and scores. Clear names and scores, Set the printer, and Check the best score. The screen directions are self explanatory.

SUGGESTIONS

1. For this activity the sound is "on" during the game section only. If it is distracting to the rest of the class turn it "off". If it is not distracting, it can be entertaining to the student playing the game.
2. D.T.A. Applications
   Warm-up
   Guided Practice
   Independent Practice
   Vocabulary: None
3. Turn the graphics "off" (at the main menu #7) if the student takes more time on the game than necessary or if the game seems to break up the learning activity.
4. See the MECC manual for further information.



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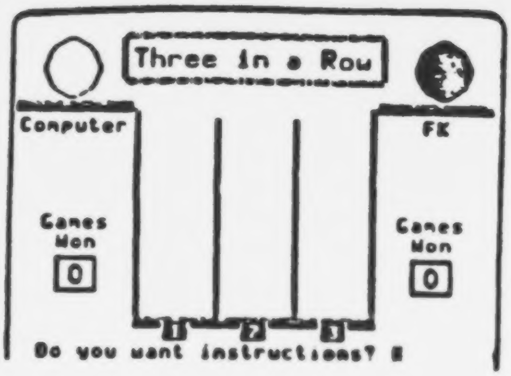
          Management Options

   1. Turn graphics off
      (Currently on)
   2. Set race lap time
      (Currently = 260 seconds)
   3. Set difficulty for games
   4. See names and scores
   5. Clear names and scores
   6. Set up the printer
   7. Check best score lists
   8. Return to main menu

  Which option? █
```



SOFTWARE SUMMARY

Company: MECC A-125
Title: ADDITION LOGICIAN
Activity: THREE IN A ROW

OBJECTIVES:

MFMT 2.1.1 Add Whole Numbers
SKILL: A6 ADD TWO NUMBERS WITH UP TO 2 DIGITS EACH, REGROUPING ONES TO TENS
A7 ADD TWO NUMBERS WITH UP TO 3 TO 4 DIGITS EACH, REGROUPING ONES TO TENS

ACTIVITY SUMMARY

Given 20 whole number addition problems with two addends and one regrouping, student will answer the problems by pressing the correct numbers keys.

The student is given a demonstration of how to play the game "Three in a Row." The student plays the game after completing a set of five problems.

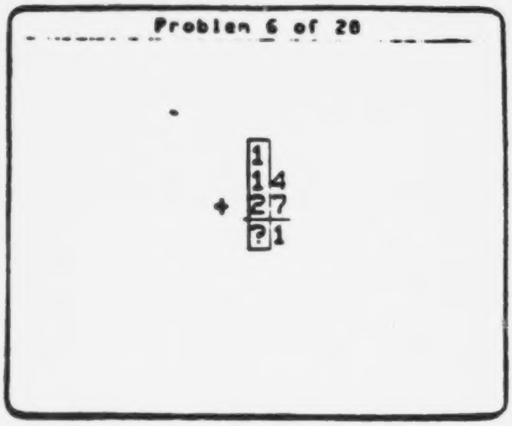
The problems are basic addition with one to two addends and at least one regrouping required.

The student answers the problems by entering the ones, then tens, then hundreds column answer. They do not press Return after each response and do not enter in the carry number.

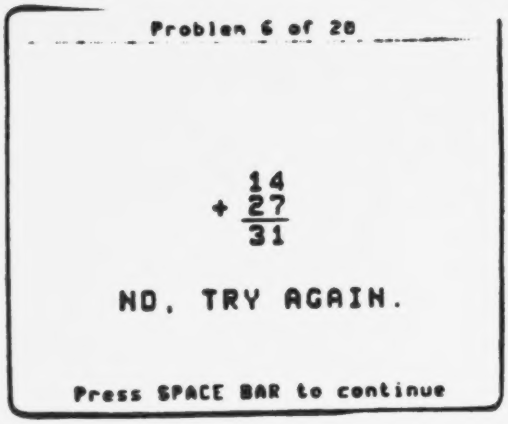
For a correct response the word "RIGHT" appears at the bottom of the screen, and then a new problem is immediately presented.

For an incorrect response "NO, TRY AGAIN" appears on the screen. After a second attempt the student is prompted with a pink rectangular box around the two numbers that should be added. There is also a question mark at the bottom where the answer should be placed. The student enters an answer and then is prompted with the box over the tens column with a question mark in the space where the carry number should be entered. (Now the student enters the carry.) The student enters the carry number then the answer and the prompt continues to the hundreds column. If the student continues to make errors the program responds with "NO TRY AGAIN" until the correct number is entered.

When the graphics are turned on the student will work on five problems, then play the "Three in a Row" game. This game is a version of tic-tac-toe, where the student selects a slot for a disk to enter and the computer selects a slot. Whoever gets three of their disks in a row wins.



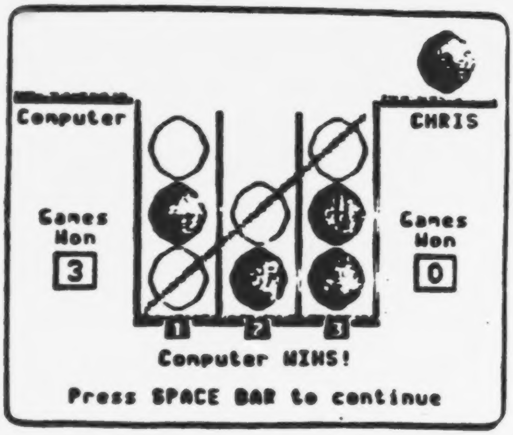
Problem 6 of 20



Problem 6 of 20

NO, TRY AGAIN.

Press SPACE BAR to continue



Computer WINS!

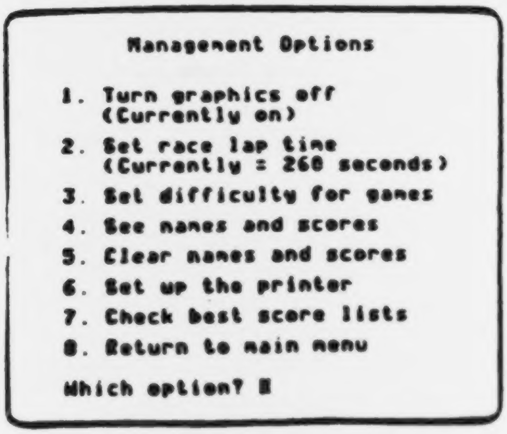
Press SPACE BAR to continue

TEACHER OPTIONS

1. The sound can be turned "off" at the main menu only.
2. Press Control-A from the main menu to access the teacher management options.
   A. Select number 1, then Return, to turn the graphics "off" or "on."
   B. Select number 3, then Return, to change the difficulty level of the game. Follow the directions on the screen. The levels can be: easy, medium or hard.
   C. Other options available to the teacher are: See names and scores, Clear names and scores, Set the printer, and Check the best score. The screen directions are self explanatory.

SUGGESTIONS

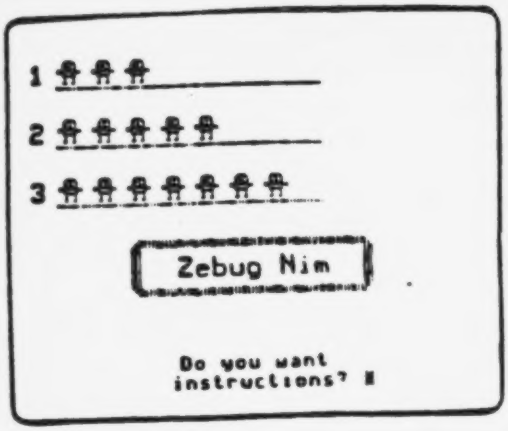
1. For this activity the sound is on during the game section only. If it is distracting to the rest of the class turn it "off." If it is not distracting, it can be entertaining to the student playing the game.
2. Turn the graphics "off" (at the main menu #7) if the student takes more time on the game than necessary or if the game seems to break up the learning activity.
3. D.T.A. Applications:
   Warm-up
   Guided Practice
   Independent Practice
   Vocabulary: None
4. See the MECC manual for further information.



```
        Management Options

   1. Turn graphics off
      (Currently on)
   2. Set race lap time
      (Currently = 260 seconds)
   3. Set difficulty for games
   4. See names and scores
   5. Clear names and scores
   6. Set up the printer
   7. Check best score lists
   8. Return to main menu

   Which option? █
```



Do you want instructions? ▮

SOFTWARE SUMMARY

Company: MECC A-125
Title: ADDITION LOGICIAN
Activity: ZEBUG NIM

OBJECTIVE:

MFMT 2.1.1 Add Whole Numbers
SKILL: A6 ADD TWO NUMBERS WITH UP TO 2 DIGITS EACH, REGROUPING ONES TO TENS
A11 ADD THREE NUMBERS WITH UP TO 2 DIGITS EACH, REGROUPING

ACTIVITY SUMMARY

Given 20 whole number addition problems with two to four addends and one or two regroupings, student will answer the problems by pressing the correct numbers keys.

The student is given a demonstration of how to play the game "Zebug Win." The student plays the game after completing a set of five problems.

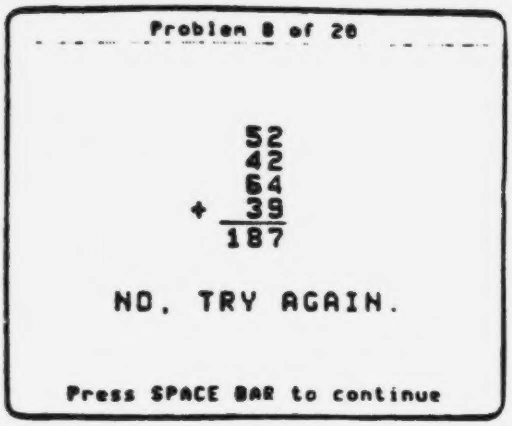
The problems are basic addition with two to four addends and one or two regroupings required.

The student answers the problems by entering the ones, then tens, then hundreds column answer. They do not press return after each response and do not enter in the carry number.

For a correct response the word "RIGHT" appears at the bottom of the screen, and then a new problem is immediately presented.

For an incorrect response "NO, TRY AGAIN " appears at the bottom of the screen. After a second attempt the student is prompted with a pink rectangular box around the numbers that should be added. There is also a question mark at the bottom where the answer should be placed. Students enter their answer and they are prompted with the box over the tens column with a question mark in the space where the carry number should be entered. (Now the student enters the carry.) Students enter the carry number then the answer and the prompt continues to the hundreds column. If the student continues to make errors the program responds with "NO, TRY AGAIN" until the correct number is entered.

When the graphics are turned "on" the students will work on five problems, then play the "Zebug" game. This is a unique game that the student plays with the computer. The student selects a row of bugs and an amount of bugs that he/she wants removed from the row. The computer does the same. The one left with the last bug is the loser.

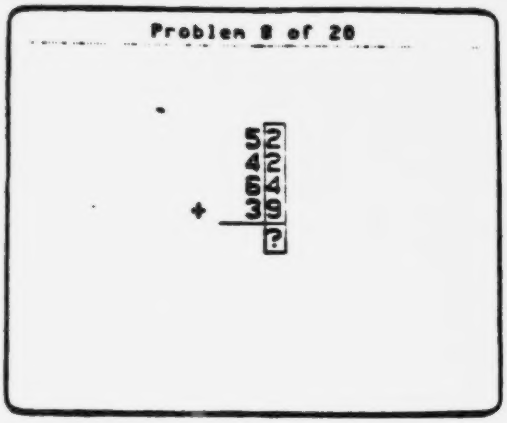


```
Problem 8 of 20

       52
       42
       64
     + 39
      187

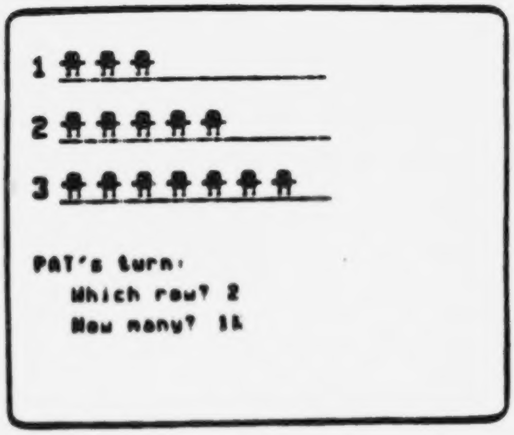
   NO. TRY AGAIN.

Press SPACE BAR to continue
```



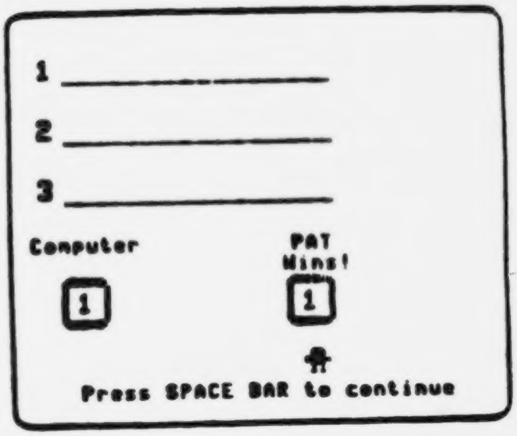
```
Problem 8 of 20

       52
       42
       64
     + 39
        ?
```



```
1 ___________
2 ___________
3 ___________

PAT's turn:
   Which row? 2
   How many? 1
```



```
1 ___________
2 ___________
3 ___________

Computer        PAT
                Wins!
   1              1

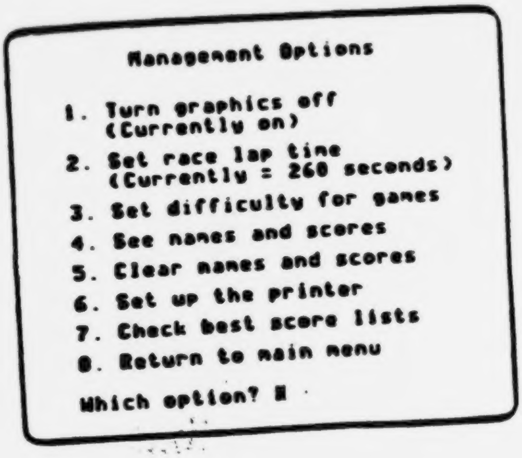
Press SPACE BAR to continue
```

TEACHER OPTIONS

1. The sound can be turned "off" at the main menu only.
2. Press Control-A from the main menu to access the teacher management options.
   - A. Select number 1, then Return, to turn the graphics "off" or "on".
   - B. Select number 3, then Return, to change the difficulty level of the game. Follow the directions on the screen. The levels can be: easy, medium or hard.
   - C. Other options available to the teacher are: See names and scores, Clear names and scores, Set the printer, and Check the best score. The screen directions are self explanatory.

SUGGESTIONS

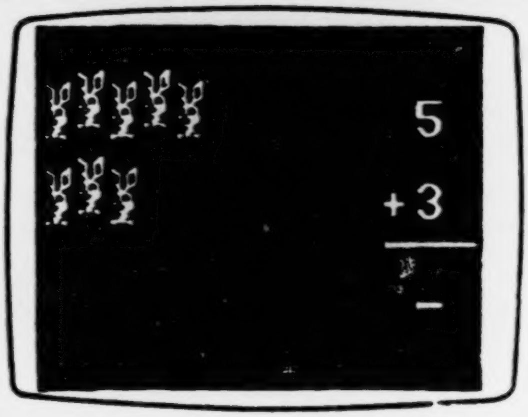
1. For this activity the sound is "on" during the game section only. If it is distracting to the rest of the class turn it "off". If it is not distracting, it can be entertaining to the student playing the game.
2. Turn the graphics "off" (at the main menu #7) if the student takes more time on the game than necessary or if the game seems to break up the learning activity.
3. D.T.A. Applications:
   - Warm-up
   - Guided Practice
   - Independent Practice
   - Vocabulary: None
4. See the MECC manual for further information.



Management Options

1. Turn graphics off
   (Currently on)
2. Set race lap time
   (Currently = 260 seconds)
3. Set difficulty for games
4. See names and scores
5. Clear names and scores
6. Set up the printer
7. Check best score lists
8. Return to main menu

Which option? ■



SOFTWARE SUMMARY

Company: MECC A-166
Title: ARITHMETIC CRITTERS
Activity: ANIMAL ADDITION

OBJECTIVES:

MFMT 2.1.1 Add Whole Numbers

SKILL:A1 RECALL ADDITION NUMBER FACTS

ACTIVITY SUMMARY

Given up to nine identical animals presented in two groups with the numeral beside each group, students will add by counting the animals or adding the numerals.

The student is presented with animal heads and numerals in verticle format. The animals are in two groups on the left side of screen, the numerals are written in vertical format on the right side of the screen. As each head appears on the screen a noise is heard. Student is expected to add the heads or numerals and enter the sum by pressing the number keys and the Return key.

When a correct answer is entered, the students are rewarded with a colorful graphic of an animal burrowing under dirt then popping up and waving.

When an incorrect response is entered, the programs first response is a line that crosses out the students answer. Student then makes a second attempt. If the answer is incorrect again, the animal heads blink one at a time and a noise is heard with each to stimulate counting. If students make a third incorrect response, the heads blink to a sound stimulus and numbers pop up under each one. The student is then given the answer.

Students are given 10 problems. (Teacher cannot modify number of problems only the numbers used in the problems.)

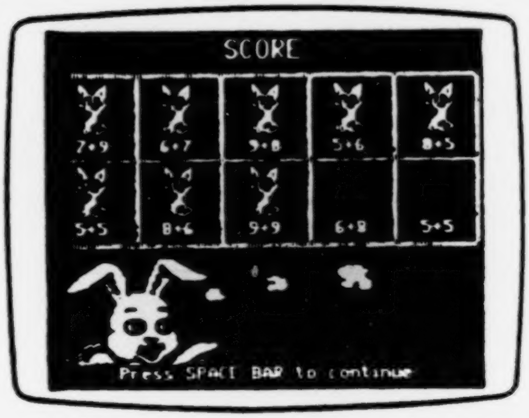
At the completion of 10 problems, students score is given in the form of a grid. Each equation that was given is shown with an animal face above the ones that were performed with no mistakes and nothing above those that mistakes were made on.

TEACHER OPTIONS

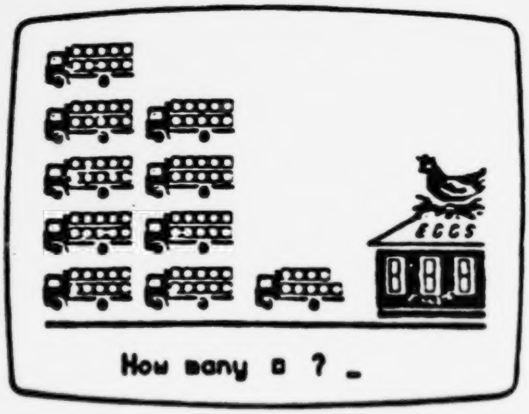
1. Press Control-S to turn the sound "on" or "off".
2. Press Control-A from the main menu to access the teacher management options.
   A. Select the top number 1-9 (by pressing #1, Return, number "from", return, and number "to")
   B. Select the bottom number the same way with the possible range of 0-9.
   C. Select the answer range the same as above with the possible range of 2-10.

SUGGESTIONS

1. Listen for sound to hear if the student is progressing and getting correct answers.
2. Leave the sound on if it does not distract other students. Sound is an important part of the activity and the feedback lets the student know what is happening that he might not otherwise notice.
3. D.T.A. Applications:
   Warm-up
   Guided Practice
   Independent Practice
   Vocabulary: None
4. See the MECC manual for further information.



Press SPACE BAR to continue



SOFTWARE SUMMARY

Company: MECC A-166
Title: ARITHMETIC CRITTERS
Activity: EGG PLANT

OBJECTIVE:

MFMT 2.1.1 Add Whole Numbers
SKILL:A1 RECALL ADDITION NUMBER FACTS

ACTIVITY SUMMARY

Given cartons on a truck in groups of tens and ones, students will practice writing numerals to represent the objects .

Students are presented with cartons of eggs on trucks. Several trucks carry ten cartons and one usually carries less. Students are expected to count the cartons and enter in the number they represent. Students can count by tens and then ones to get the number of cartons. They are expected to enter in the right answer by pressing the number keys.

For a correct response the student is rewarded with a tune and movement by the "on screen" chicken. They press Return and begin another problem.

For an incorrect response the student hears a tune and sees a line that crosses out their answer. For a second incorrect response a number representing the amount of cartons on each truck pops onto the truck (this will be either 10 or 0-9) A sound is heard with each number to stimulate counting. Students also see the numbers placed in a tens or ones column in a cloud above the chicken.

-
EX. Tens - Ones
-
5 - 9
-

For a third incorrect response the numbers blink one by one and a noise is heard with each. The students then watch the "tens" number move down and the "ones" number move down until the two digit answer is in place. They are given the answer and asked to press the space bar to move on.

Students are given 10 problems. The teacher cannot modify the amount of problems presented, only the numbers used.

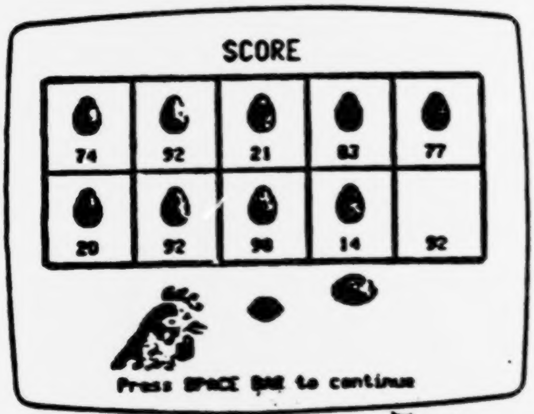
At the completion of the ten problems the score is given in the form of a grid. Each box contains the two digit number (presented in the activity) and an egg in the box of those that no mistake was made and nothing in the box of those that a mistake was made.

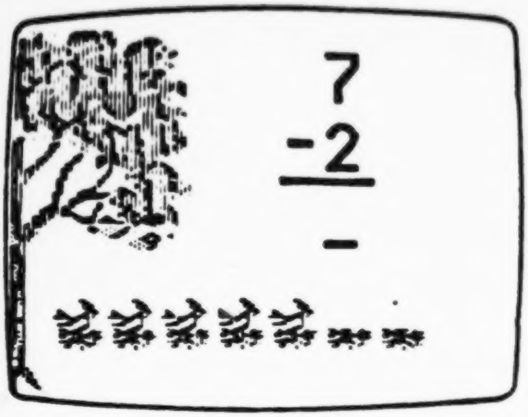
TEACHER OPTIONS

1. Press Control-S to turn the sound "on" or "off" whenever the program is waiting for a response.
2. Press Control-A from the main menu to access the teacher management options.
   A. Select the range of numbers by pressing the number 1, enter the # "from", press Return, enter the # "To", and press Return. The maximum range is 10-99.
   B. Select the format of the feedback by pressing number 2, Return, and press the number of the format that most closely represents the teacher's instructional model, then press return.

SUGGESTIONS

1. Listen for the sound to hear if the student is progressing and getting correct answers.
2. Leave the sound "on" if it does not distract other students. Sound is an important part of the activity and the feedback lets the student know what is happening that he might not otherwise notice.
3. D.T.A. Applications:
   - Warm-up
   - Guided Practice
   - Independent Practice
   - Vocabulary: Tens and ones
4. See the MECC manual for further information.





SOFTWARE SUMMARY

Company: MECC A-166
Title: ARITHMETIC CRITTERS
Activity: FOWL PLAY

OBJECTIVES:

MFMT 2.1.1 Subtract Whole Numbers
SKILL: S1. RECALL SUBTRACTION NUMBER FACTS

ACTIVITY SUMMARY

Given up to eighteen bird graphics in two groups and the numerals they represent, students practice subtraction by observing some birds disappearing and counting those that remain.

Students are presented with a numeral and the same number of birds, one at a time with a sound stimulus as each pops up. The second numeral pops up and the matching amount of birds on the screen disappear one by one with a sound stimulus. Students are expected to count the remaining birds and enter the answer by pressing the number keys and the Return key.

When a correct answer is entered the students are rewarded with a simple tune from each of the remaining birds.

When an incorrect response is entered, the programs first response is a line that crosses out the students answer. The student then makes a second attempt. If the answer is incorrect again, the birds blink one at a time and a noise is heard with each to stimulate counting. If students make a third incorrect response, the birds blink to a sound stimulus and numerals pop up under each one. The student is then given the answer.

Students are given 10 problems. (Teacher cannot modify number of problems only the numbers used in the problems.)

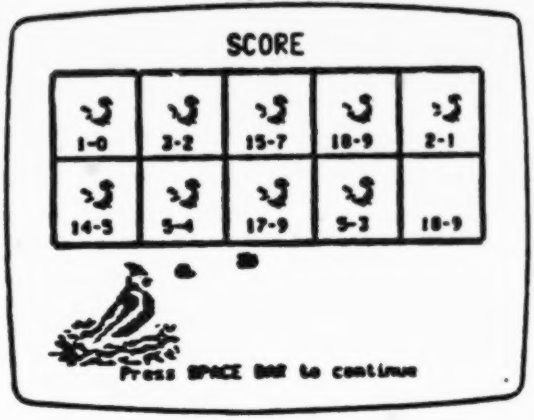
At the completion of 10 problems, the student's score is given in the form of a grid. Each equation that was given is shown with a bird above the ones that were performed with no mistakes and nothing above those that mistakes were made on.

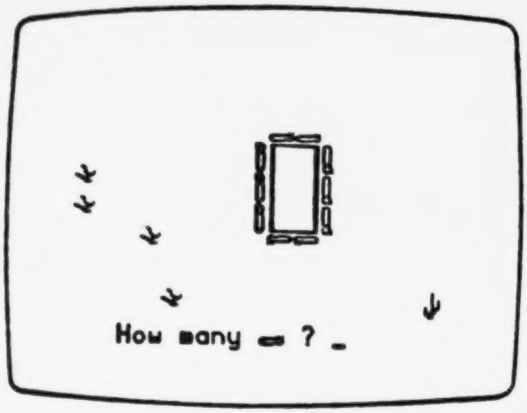
TEACHER OPTIONS

1. Press Control-S to turn the sound "on" or "off."
2. Press Control-A from the main menu to access the teacher management options.
   A. Select the top number 1-18 (by pressing #1, Return, number "from", return, and number "to")
   B. Select the bottom number the same way with the possible range of 0-9.
   C. Select the answer range with the same as above with the possible range of 1-9.

SUGGESTIONS

1. Listen for sound to hear if the student is progressing and getting correct answers.
2. Leave the sound "on" if it does not distract other students. Sound is an important part of the activity and the feedback lets the student know what is happening that he might not otherwise notice.
3. D.T.A. Applications:
   - Warm-up
   - Guided Practice
   - Independent Practice
   - Vocabulary: None
4. See the MECC manual for further information.





SOFTWARE SUMMARY

Company: MECC A-166
Title: ARITHMETIC CRITTERS
Activity: UNIT WORM

OBJECTIVES:

MFMT 2.1.1 Add Whole Numbers
SKILL: A1 RECALL ADDITION NUMBER FACTS

ACTIVITY SUMMARY

Students are shown a caterpillar who crawls on a line or the perimeter of a box, leaving a silhouette behind. As the caterpillar leaves the silhouette it makes a sound. Students are expected to count the units of measure (caterpillar's silhouette) and enter in the answer by pressing the number keys and the Return key.

For a correct response the student is rewarded with a tune and a colorful graphic of a butterfly in flight.

When an incorrect response is entered, the programs first response is a line that crosses out the student's answer. Student then makes a second attempt. If the answer is incorrect again, the silhouettes blink one at a time and a noise is heard with each one to stimulate counting. If the student makes a third incorrect response, the silhouettes blink to a sound stimulus and numbers pop up above each one. The student is then given the answer.

Students are given 10 problems. (Teacher cannot modify number of problems only the numbers used in the problems.)

At the completion of 10 problems, the student's score is given in the form of a grid. Each measurement that was given is shown with a butterfly above the ones that were performed with no mistakes and nothing above those that mistakes were made on.

TEACHER OPTIONS

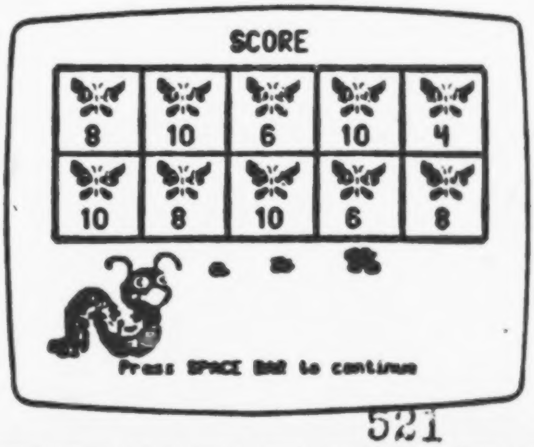
1. Control-S can be used to turn the sound "off".

2. Use "Control-A" to get into the teacher management at the main menu. (See "How to Modify the Disk.")
   A. Select 1, to modify the number range of a possible 1-40.
   B. Select 2, to modify the problem type (straight lines or boxes that the caterpillar measures)
   C. Select 3 to change the worms size to small, medium, large or all three.
   D. Select 4 to change the speed that the worm travels the lines and leaves its silhouette behind. (slow, medium or fast)
   E. Select 5, to indicate whether the worm's silhouette is left behind or not. (silhouette is turned on or off)

SUGGESTIONS

1. Listen for sound to hear if the student is progressing and getting correct answers.
2. D.T.A. Applications
   Warm-up
   Guided Practice
   Independent Practice
   Vocabulary: None
4. Leave the sound on if it does not distract other students. Sound is an important part of the activity and the feedback lets the student know what is happening that he might not otherwise notice.
5. Leave the silhouettes option on, without it student relies mostly on the sound stimulus or guessing.

6. See the MECC manual for further information.


SCORE

8	10	6	10	4
10	8	10	6	8

Press SPACE BAR to continue

521

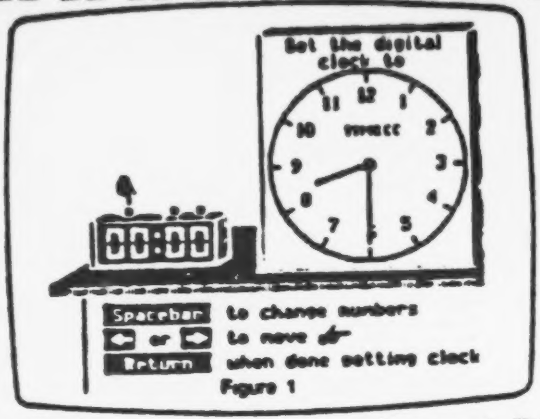


Figure 1

SOFTWARE SUMMARY

Company: MECC A-168
Title: CLOCKWORKS
Activities: DIGITAL DRILL

MFMT 5.1.6 Find Elapsed Time

SKILL: MET1 IDENTIFY CORRECT TIME
* SEE NOTE BELOW

ACTIVITY SUMMARY

DIGITAL DRILL provides students with practice in setting a given time on a digital clock. Ten problems are presented in the format shown in Figure 1 (see above). If the correct answer is given, the Wuzzle provides feedback and performs a trick (Figure 2).

Students are given two opportunities to set the right time for each problem. If they are wrong after the second try, the correct time is set for them to study. At the conclusion of the lesson, a summary screen shows how many problems were done correctly on the first try. If all ten problems were correct on the first try, the Wuzzle will do a variety of tricks following the summary.

NOTE: DIGITAL DRILL gives students practice in changing a time to numbers such as 5:20. This is really a prerequisite skill to using the mathematical approach for finding elapsed time.

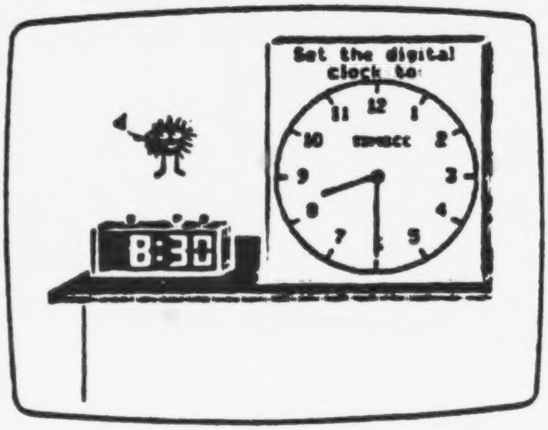
TEACHER OPTIONS

1. To turn the sound on and off, use the option on the main menu or press CONTROL-S anywhere in the program.
2. Press CONTROL-A from the main menu to access the Teacher Options.
   A. Option 1 allows intervals of the following times to be set either alone or in combination with each other: 60 min., 30 min., 15 min., 5 min., or 1 min.
   B. Option 2 allows you to control the types of expressions used in the program: clock (digital or analog); numbers and words (3 o'clock or 10 minutes after 2 o'clock); words (three o'clock or ten mintues to one o'clock); quarter hours (quarter past 2 o'clock or quarter to nine o'clock); and half hours (half past ten o'clock or ten-thirty).

C. Option 3 allows you to choose the number of marks on the clock. You may have 60, 12, 4, none, or a combination of all so that different choices appear randomly.
D. Option 4 allows you to choose the number of numerals on the clock. You may have 12, 4, none, or a combination of all the choices so that different choices appear randomly.
E. Option 5 allows you to choose Arabic or Roman numerals. For the purpose of the MFMT, choose Arabic.
F. Option 6 allows you to customize the clocks on the program by typing in a name with up to 8 characters. You might want to have your school name, town name, or teacher's name appear.

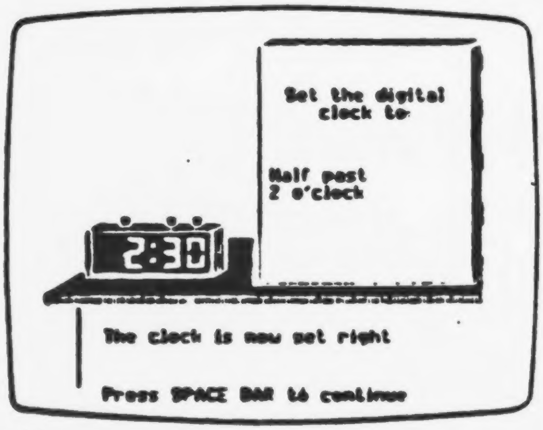
SUGGESTIONS

1. Adjust the difficulty level for your students using the Teacher Options.
2. Sound is not an integral part of the program. If it is distracting, turn it off.
3. Choose Option 6 on the Teacher Options and customize your disks for your school or a special student. (This only has to be done once.)
4. D.T.A. Applications:
   - Warm-up
   - Independent Practice
   - Vocabulary: digital
5. See the MECC manual for further information.



Set the digital clock to:

Figure 2

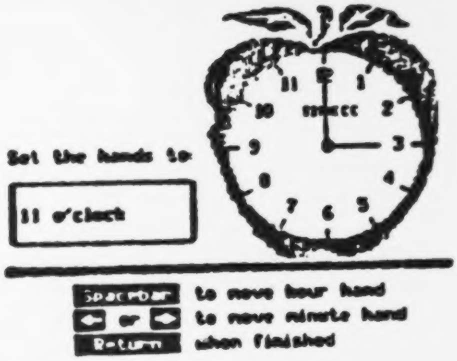


Set the digital clock to:

Half past 2 o'clock

The clock is now set right

Press SPACE BAR to continue



SOFTWARE SUMMARY

Company: MECC A-168
Title: CLOCKWORKS
Activities: SET THE CLOCK

OBJECTIVES:

MFMT 5.1.6 Find Elapsed Time

SKILL: MET1 IDENTIFY CORRECT TIME

ACTIVITY SUMMARY

SET THE CLOCK gives students practice in setting the time on an analog clock. Ten problems are given using the format shown in Figure 1 above. The type of problems and expressions shown to represent the time are controlled by the Teacher Option settings (see below). The amount of movement by the minute hand is regulated by the time interval settings. Feedback and motivation are provided by the worm (Figure 2).

The student is given two opportunities to correctly set the time. After two misses, the clock will display the correct setting so that the students can see the correct answer. Each time, the student gets two correct answers on the first try, the worm will emerge from the apple. If all ten problems are answered correctly on the first try, the worm will hop out of the apple and do a dance.

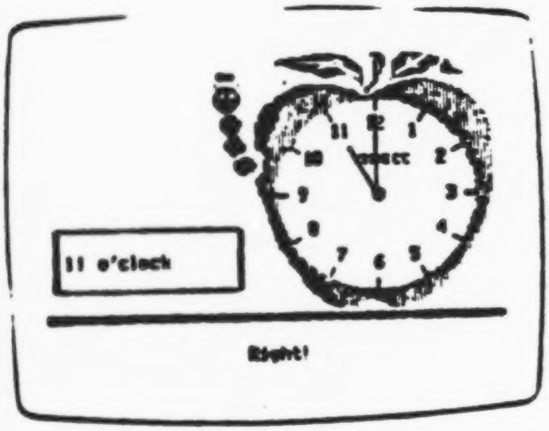
TEACHER OPTIONS

1. To turn the sound on and off, use the option on the main menu or press CONTROL-S anywhere in the program.
2. Press CONTROL-A from the main menu to access the Teacher Options.
   - A. Option 1 allows intervals of the following times to be set either alone or in combination with each other: 60 min., 30 min., 15 min., 5 min., or 1 min.
   - B. Option 2 allows you to control the types of expressions used in the program: clock (digital or analog); numbers and words (3 o'clock or 10 minutes after 2 o'clock); words (three o'clock or ten mintues to one o'clock); quarter hours (quarter past 2 o'clock or quarter to nine o'clock); and half hours (half past ten o'clock or ten-thirty).
   - C. Option 3 allows you to choose the number of marks on the clock. You may have 60, 12, 4, none, or a combination of all so that different choices appear randomly.

D. Option 4 allows you to choose the number of numerals on the clock. You may have 12, 4, none, or a combination of all the choices so that different choices appear randomly.
E. Option 5 allows you to choose Arabic or Roman Numerals. For the purpose of the MFMT, choose Arabic.
F. Option 6 allows you to customize the clocks on the program by typing in a name with up to 8 characters. You might want to have your school name, town name, or teacher's name appear.

SUGGESTIONS

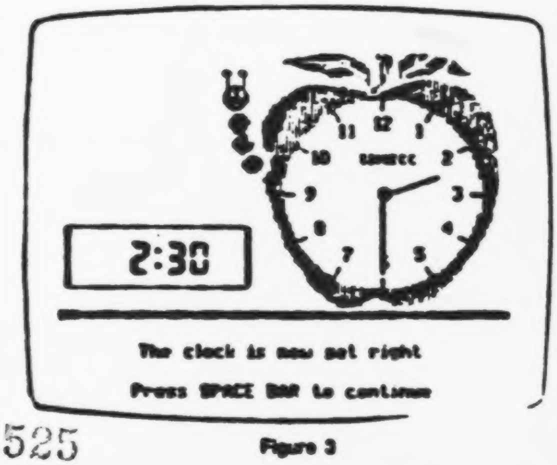
1. Adjust the difficulty level for your students using the Teacher Options.
2. Sound is not an integral part of the program. If it is distracting, turn it off.
3. Choose Option 6 on the Teacher Options and customize your disks for your school or a special student. (This only has to be done once.)
4. D.T.A. Applications:
   Warm-up
   Independent Practice
   Vocabulary: quarter, half, before, after, past, to (meaning before), o'clock, numbers one through twelve
5. See the MECC manual for further information.



11 o'clock

Right!

Figure 2

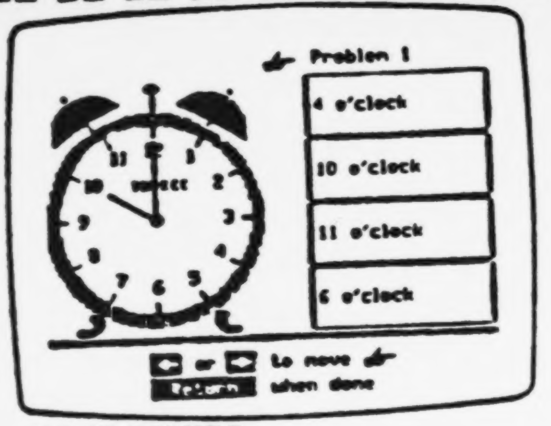


2:30

The clock is now set right

Press SPACE BAR to continue

Figure 3



SOFTWARE SUMMARY

Company: MECC A-168
Title: CLOCKWORKS
Activities: WHAT'S THE TIME?

OBJECTIVES:

MFMT 5.1.6 Find Elapsed Time

SKILL: MET1 IDENTIFY CORRECT TIME

ACTIVITY SUMMARY

WHAT'S THE TIME? drills students on telling analog time. Ten problems are presented in the multiple choice format. The problem types and expressions are controlled by the Teacher Options (see below). If a variety of types and expressions are used, a student might get such choices as: 5 minutes after 3, 25 minutes before 2, 5 minutes past 1, or 19 minutes to 3. For each correct response on the first try, the alarm will ring. If a problem is missed, the student continues trying until the correct answer is selected or it is the only remaining choice. At the conclusion of the lesson, a summary indicates how many problems the student got right on the first try. If the student had all ten right on the first try, the Wuzzle will appear and ring the alarm.

TEACHER OPTIONS

1. To turn the sound on and off, use the option on the main menu or press Control-S anywhere in the program.
2. Press CONTROL-A from the main menu to access the Teacher Options.
   A. Option 1 allows intervals of the following times to be set either alone or in combination with each other: 60 min., 30 min., 15 min., 5 min., or 1 min.
   B. Option 2 allows you to control the types of expressions used in the program: clock (digital or analog); numbers and words (3 o'clock or 10 minutes after 2 o'clock); words (three o'clock or ten mintues to one o'clock); quarter hours (quarter past 2 o'clock or quarter to nine o'clock); and half hours (half past ten o'clock or ten-thirty).
   C. Option 3 allows you to choose the number of marks on the clock. You may have 60, 12, 4, none, or a combination of all so that different choices appear randomly.

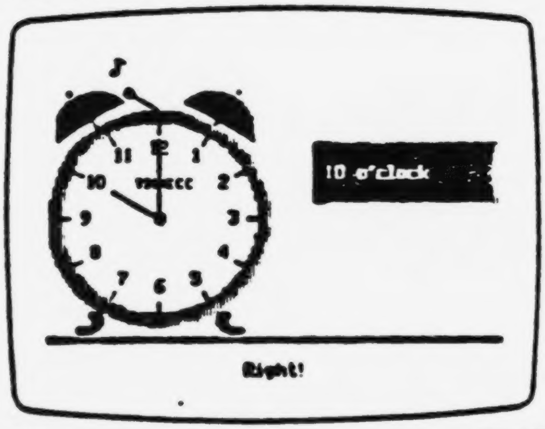
D. Option 4 allows you to choose the number of numerals on the clock. You may have 12, 4, none, or a combination of all the choices so that different choices appear randomly.

E. Option 5 allows you to choose Arabic or Roman numerals. For the purpose of the MFMT, choose Arabic.

F. Option 6 allows you to customize the clocks on the program by typing in a name with up to 8 characters. You might want to have your school name, town name, or teacher's name appear.

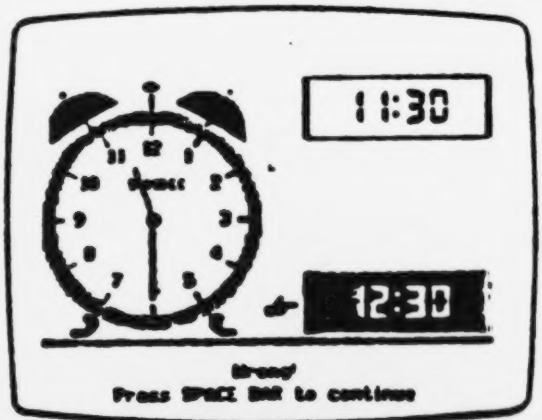
SUGGESTIONS

1. Adjust the difficulty level for your students using the Teacher Options.
2. Sound is not an integral part of the program. If it is distracting, turn it off.
3. Choose Option 6 on the Teacher Options and customize your disks for your school or a special student. (This only has to be done once.)
4. D.T.A. Applications:
   Warm-up
   Independent Practice
   Vocabulary: quarter, half, before, after, past, to (meaning before), o'clock, numbers one through twelve
5. See the MECC manual for further information.



10 o'clock

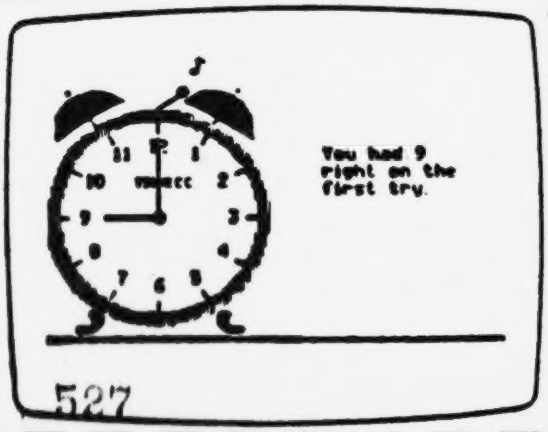
Right!



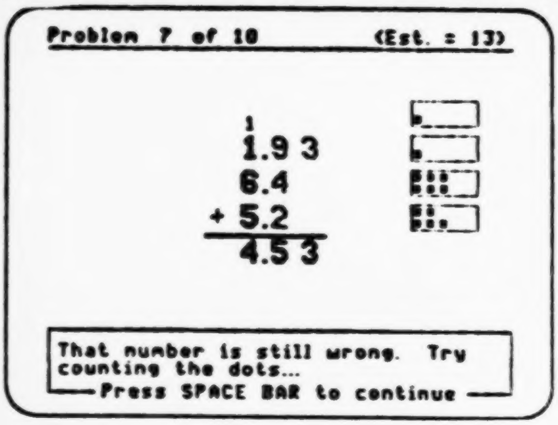
11:30

12:30

Wrong!
Press SPACE BAR to continue



You had 9 right on the first try.



```
Problem 7 of 10                (Est. = 13)

        1
        1.9 3
        6.4
      + 5.2
      -------
        4.5 3

That number is still wrong.  Try
counting the dots...
---Press SPACE BAR to continue---
```

SOFTWARE SUMMARY

Company: MECC A-207
Title: CONQUERING DECIMALS
Activity: ADDITION

OBJECTIVES:

MFMT 2.1.8 Add Decimals
SKILL: AD1 Add up to three numbers with one decimal place without regrouping.
AD2 Add up to three numbers with one decimal place with regrouping.
AD3 Add two numbers with two decimal places without regrouping.
AD4 Add two numbers with two decimal places with regrouping.

Does not work on the Apple II+

ACTIVITY SUMMARY

Students are presented with decimal addition problems that may require regrouping. The teacher can make the following modifications to the program: the quantity of problems for the student to work on in a set, the types of problems in each set, the option to estimate the answer before working on it, the regroup phrases and whether a game is played at the completion of each set or not.

Students enter their response to a problem by pressing the number keys, an "R" or a "C" for regrouping or carrying, then Return. (Return is pressed after the complete answer has been entered) The program does not provide a way to generate isolated problems that do or do not require regrouping. The decimal point is automatically placed in the sum position when the problem is presented.

For a correct sum on the first try, the students will see a positive message: "Very good! You made no mistakes." If the students make a mistake and eventually complete the problem, the feedback is "Right." There is no feedback until the students enter in the full answer and then press Return.

When the students enter an incorrect sum the feedback provides check marks under the numbers in the sums that are incorrect. There is also written feedback that says: "Wrong. Please try again.

If the students respond incorrectly twice, the program responds by guiding them through the problem step by step. All other columns fade while the column that should be computed remains highlighted. The students have two chances to add this column of numbers. If they are incorrect both times they are further assisted with "dot" graphics that represent the numbers. Students need only count the dots at this point. When they enter the correct answer, the next column is highlighted.

When the students complete a set, they are given a scoring frame and three options.

EX. ADDITION

Problems worked........................5
Number of problems
right on first try.....................5

GOOD JOB!

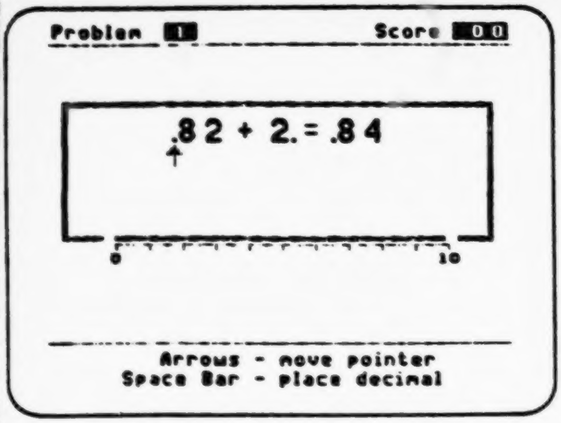
You Can:

1. Do more (+) problems
2. Play a game
3. Return to the main menu

There are two decimal problem solving games that the students can choose to play: Decimal Dash and Misplaced Decimals.

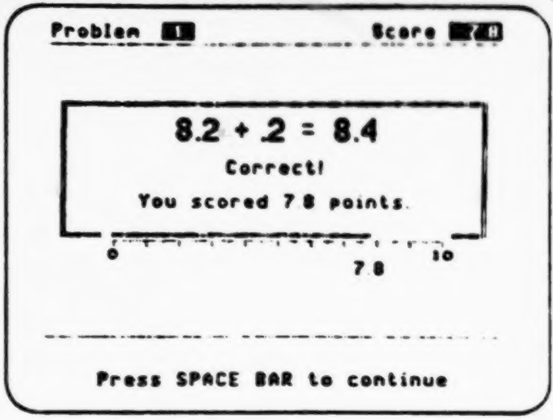
Decimal Dash is a game that combines the adding or subtracting of decimal numbers with strategy. Students choose to be the "tortoise" or the "hare" and can race against the computer or another student. They use the arrow keys to select two decimal numbers that will give a sum or difference that will gain distance on the race course. The students choose numbers that will bring them to the end of the course before their opponent. There are traps and short cuts that the game directions describe.

Misplaced Decimals is a game in which students quickly try to rearrange decimal points in a number sentence to make the expression true. More than one decimal point may be moved and there are four possible solutions per problem. The students use the arrow (directional) keys to move the decimal point and the Space Bar to place it.


Problem 1 Score 00

.82 + 2.= .84

Arrows - move pointer
Space Bar - place decimal


Problem 1 Score 78

8.2 + .2 = 8.4

Correct!

You scored 7.8 points.

Press SPACE BAR to continue

TEACHER OPTIONS

1. Press Control-S to turn the sound "off" or "on" at any point in the program.
2. Press Control-A to get into the teacher management at the main menu.

   A. The teacher can turn the Subtraction operation activity "Off" and leave only Addition. Within the Addition activity several modifications can be made by moving the highlighted box with the arrow keys and pressing the Return key:

      1. Select the number of problems from 5-25
      2. Select the use of estimation or not
      3. Select the Mastery percentage from 0%-100%
      4. Select the Problem types:
         A: ADD 2 ADDENDS, TENTHS ONLY;
         B: ADD 2 ADDENDS, HUNDREDTHS ONLY;
         C: ADD 2 ADDENDS, THOUSANDTHS ONLY;
         D: ADD 2 ADDENDS, MIXED PROBLEMS
         E: 3 OR 4 ADDENDS, MIXED PROBLEMS
         F: 2 ADDENDS, MONEY PROBLEMS

   B. The teacher can change the "Regroup" phrases. The phrases can be changed to "rename", "carry" or "trade." These phrases will appear on the screen during the problem solving process.

   C. The following game modifications can be made:

      1. The games can be turned "on" or "off".
      2. Access to games can occur after finishing a set, after mastering a set, from the main menu or not allowed.

SUGGESTIONS

1. Leave the sound on if it does not distract other students. Sound can be an important part of the game and the feedback lets the student know what is happening that he might not otherwise notice.

2. Modify the problem types and phrases to the ones that the student has practiced.

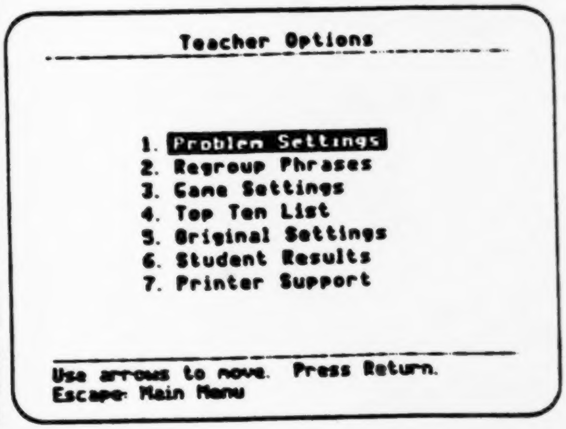
3. Limit the amount of games to keep a student on task with the math problems.

4. Review the games with the students prior to the learning activity. The directions may be difficult to understand.

5. D.T.A. Applications

   Warm-up (set of 8-10 problems)
   Guided Practice
   Independent Practice

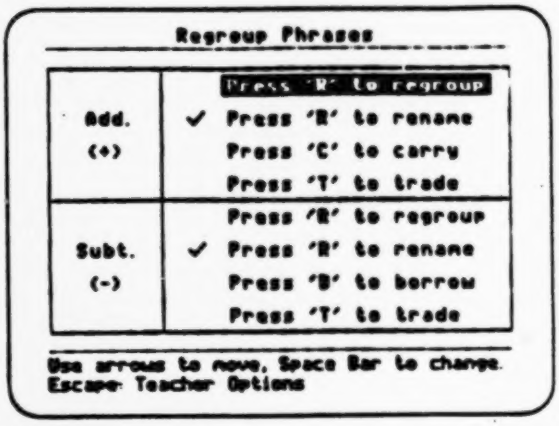
6. Vocabulary: Regroup, Carry, Rename



Teacher Options

1. Problem Settings
2. Regroup Phrases
3. Game Settings
4. Top Ten List
5. Original Settings
6. Student Results
7. Printer Support

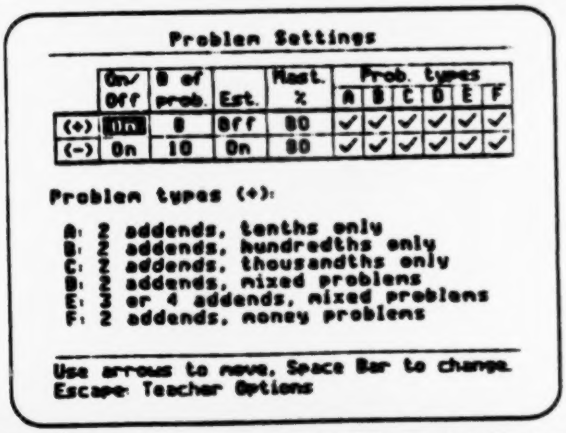
Use arrows to move. Press Return.
Escape: Main Menu



Regroup Phrases

Add. (+)		Press 'R' to regroup
	✓	Press 'R' to rename
		Press 'C' to carry
		Press 'T' to trade
Subt. (-)		Press 'R' to regroup
	✓	Press 'R' to rename
		Press 'B' to borrow
		Press 'T' to trade

Use arrows to move, Space Bar to change.
Escape: Teacher Options



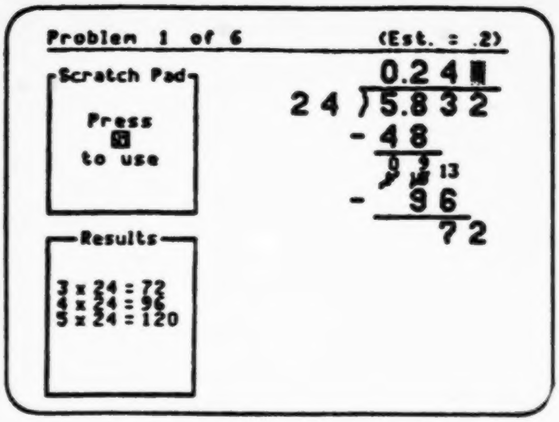
Problem Settings

	On/ Off	# of prob.	Est.	Mast. %	Prob. types					
					A	B	C	D	E	F
(+)	On	8	Off	80	✓	✓	✓	✓	✓	✓
(-)	On	10	On	80	✓	✓	✓	✓	✓	✓

Problem types (+):

A: 2 addends, tenths only
B: 2 addends, hundredths only
C: 2 addends, thousandths only
D: 2 addends, mixed problems
E: 3 or 4 addends, mixed problems
F: 2 addends, money problems

Use arrows to move, Space Bar to change.
Escape: Teacher Options



Problem 1 of 6 (Est. : .2)

Scratch Pad

Press S to use

Results

3 x 24 = 72
4 x 24 = 96
5 x 24 = 120

SOFTWARE SUMMARY

Company: MECC A-208
Title: CONQUERING DECIMALS
Activity: DIVISION

OBJECTIVES:

MFMT 2.1.11 Divide Decimals
SKILL: DD1 Place the decimal point in the quotient correctly when dividing by a whole number
DD2 Divide a 1-digit whole number into a 2- to 4- digit number having 1 or 2 decimal places
DD3 Divide a 2-digit whole number into a 2- to 4-digit number having 1 or 2 decimal places
Z1 Recognize that with any decimal ending in zero(s) the zero(s) may be dropped

Does not run on the Apple II+

ACTIVITY SUMMARY

Students are presented with division problems that have possible remainders. The teacher has the option of selecting the amount of problems for the student to work on in a set. The teacher also has the option of selecting the types of problems in each set and whether a game is played at the completion of each set or not.

Students begin each problem by pressing the directional (arrow) keys to move the decimal points. With the same key stroke the decimal point in both the divider and dividend are moved. Students enter in their response to the problem by pressing the arrow keys to position the number in the quotient, then the number keys. There is a scratch pad provided at the upper left hand corner of the screen. They can access this by pressing the letter "s" for "scratch" pad. In this square the student can try a variety of multiplication facts to help them get the correct qotient. They press an "R" for regrouping then Return. (Return is pressed after the complete answer has been entered. Once this occurs they must press "s" again to get back into the scratch pad)
The results of their multiplication is recorded in another box below the scratch pad. They can use the "Results" box to guide their choice of divisors.

For a correct sum on the first try, the students see a positive message: "Very good! You made no mistakes." If a student makes a mistake and eventually completes the problem, the feedback is "Right". There is no feedback until the student enters in the full answer and then presses Return.

When the student enters an incorrect quotient the feeback is: "That is not the right number. Please try again."

When the student enters an incorrect quotient the feeback is: "That is not the right number. Please try again."

If the student responds incorrectly twice, the program then assists them by isolating the necessary operation at the bottom of the screen.

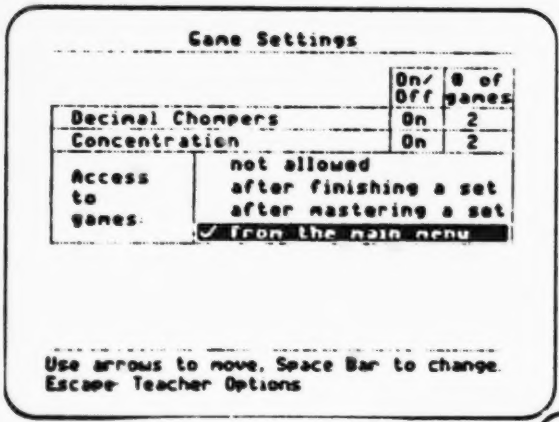
When students have completed the set of problems, they are provided with a scoring frame:

EX. DIVISION

Problems worked........................5
Number of problems
Right on first try.....................3

You Can:

1. Do more (/) problems
2. Play a game
3. Return to the main menu

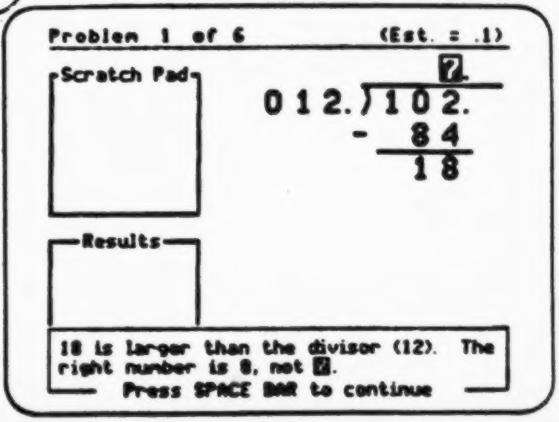


Game Settings

	On/ Off	# of games
Decimal Chompers	On	2
Concentration	On	2

Access to games:
not allowed
after finishing a set
after mastering a set
✓ from the main menu

Use arrows to move, Space Bar to change.
Escape Teacher Options



Problem 1 of 6 (Est. = .1)

18 is larger than the divisor (12). The right number is 8, not 7.

Press SPACE BAR to continue

TEACHER OPTIONS

1. Press Control-S to turn the sound "off" or "on" at any point in the program.
2. Press Control-A to get into the teacher management at the main menu.

   A. The teacher could turn all the other operations or activities "Off" except Division. Within the Division activity several modifications can be made by moving the highlighted box with the arrow keys and pressing the Return key:

      1. Select the number of problems from 5-25
      2. Select the Mastery percentage from 0%-100%
      3. Select the Problem types: (See screen or manual)

      *THESE SKILLS EXTEND BEYOND MFMT REQUIREMENTS.

      A. Divide decimal numbers by whole numbers where quotients are exact
      B. Divide two decimal numbers where quotients are exact
      C. Divide two decimal numbers where quotients are exact and zeros must be added in the dividend at the start of the problem
      D. Divide whole numbers or decimal numbers by powers of 10 in a horizontal format
      E. Divide two numbers where quotients are exact and annexing zeros to the dividend is required to complete the problem
      F. Divide two decimal numbers where the quotient is exact and must be correctly rounded

   B. The following game modifications can be made:

      1. The game can be turned "on" or "off".
      2. The number of games allowed following a set of problems can be changed. Range is 1-9.
      3. Other modifications specific to the games can be made.

SUGGESTIONS

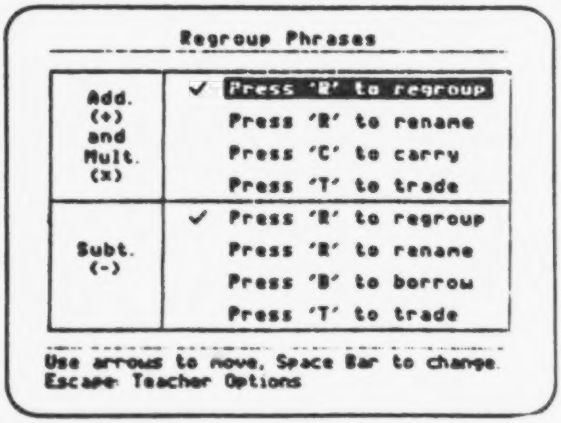
1. Leave the sound "on" if it does not distract other students. Sound can be an important part of the game and the feedback lets the student know what is happening that he might not otherwise notice.

2. a. Limit the amount of games to keep a student on task with the math problems.
   b. Review the games with the students prior to the learning activity. There is extensive reading involved in the directions and the games are challenging.

3. D.T.A. Applications

Warm-up
Independent Practice
Guided Practice

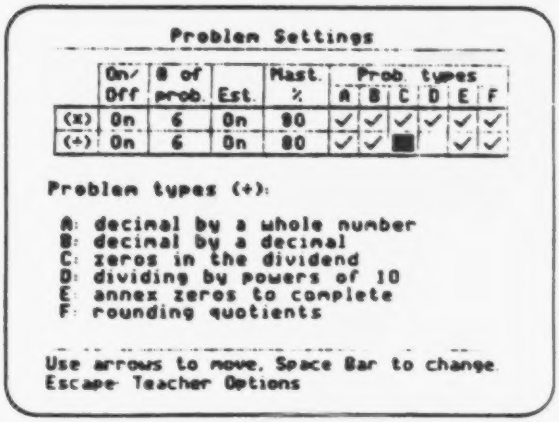
Vocabulary: Divisor, Dividend, Quotient



Regroup Phrases

Add. (+) and Mult. (x)	✓ Press 'R' to regroup Press 'R' to rename Press 'C' to carry Press 'T' to trade
Subt. (-)	✓ Press 'R' to regroup Press 'R' to rename Press 'B' to borrow Press 'T' to trade

Use arrows to move, Space Bar to change.
Escape: Teacher Options



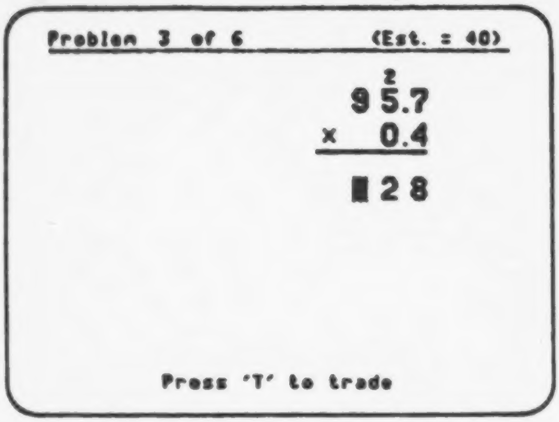
Problem Settings

	On/ Off	# of prob.	Est.	Mast. %	Prob. types A	B	C	D	E	F
(x)	On	6	On	80	✓	✓	✓	✓	✓	✓
(÷)	On	6	On	80	✓	✓	■		✓	✓

Problem types (÷):

A: decimal by a whole number
B: decimal by a decimal
C: zeros in the dividend
D: dividing by powers of 10
E: annex zeros to complete
F: rounding quotients

Use arrows to move, Space Bar to change.
Escape: Teacher Options



```
Problem 3 of 6          (Est. = 40)

                  2
                9 5.7
              ×   0.4
              -------
                ▮ 2 8

         Press 'T' to trade
```

SOFTWARE SUMMARY

Company: MECC A-201
Title: CONQUERING DECIMALS
Activity: MULTIPLICATION

OBJECTIVES:

MFMT: 2.1.10 Multiply Decimals

SKILLS:

MD1	IDENTIFY THE NUMBER OF DECIMAL PLACES IN THE PRODUCT
MD2	PLACE THE DECIMAL POINT IN THE PRODUCT CORRECTLY WITH UP TO TWO DECIMAL PLACES
MD3	PLACE THE DECIMAL POINT IN THE PRODUCT CORRECTLY WITH UP TO THREE DECIMAL PLACES
MD4	MULTIPLY A 3-DIGIT NUMBER BY A 2-DIGIT NUMBER WITH UP TO 2 DECIMAL PLACES IN EACH NUMBER

NOTE: Does not run on the Apple II+

ACTIVITY SUMMARY

Students are presented with decimal multiplication problems that require regrouping. The teacher can make the following modifications to the program: the number of problems for the student to work on in a set, the types of problems in each set, the option to estimate the answer before working on it, the regroup phrases and whether a game is played at the completion of each set or not.

Students enter their response to the problem by pressing the number keys, an "R" or a "C" for regrouping or carrying, then Return. (Return is pressed after the complete answer has been entered) Numbers are entered from right to left.

For a correct sum on the first try, the students see a positive message: "Very good! You made no mistakes." If a student makes a mistake and eventually completes the problem, the feedback is "Right". There is no feedback until the student enters in the full answer and then presses Return.

When the student enters an incorrect sum the feedback provides check marks under the numbers in the sum that are incorrect. There is also written feedback that says: "Wrong. Please try again".

If the student responds incorrectly twice, the program then assists them by guiding them through the problem step by step. The essential portion of the problem is highlighted. If the student makes multiplication errors a multiplication chart appears on screen to assist them. If they forget to add the "carry" the addition problem appears at the bottom of the screen. The decimal point is placed by moving the pointer with the left and right arrow keys and pressing Return.

```
Ex.         product            regroup
               0       +          3       = 3
```

When students have completed the set of problems, they are provided with a scoring frame:

```
EX.                MULTIPLICATION

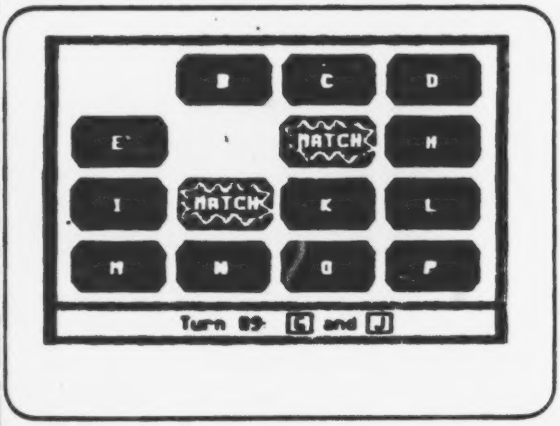
Problems worked.......................5
Number of problems
right on first try....................3
```

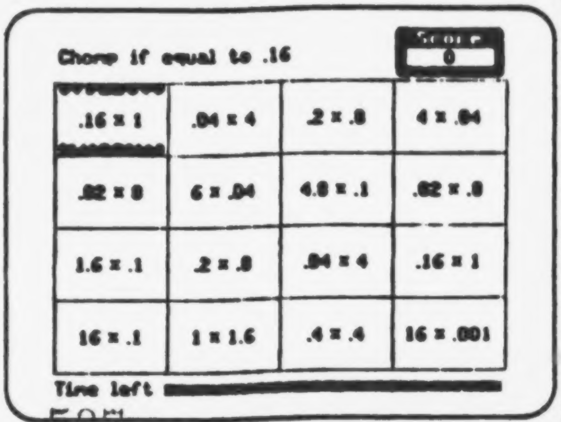
You Can:
1. Do more (x) problems
2. Play a game
3. Return to the main menu

There are two decimal problem solving games that the students can choose to play: Decimal Chompers and Concentration:

Decimal Chompers has a game board structure that is similar to MECC's Fraction Muncher program. The student controls a set of teeth "chompers" and uses the arrow keys to chomp multiplication problems that are equal to a given decimal number.

Concentration is set up like the game concentration. The student tries to match fractions with their equivalent decimal value. The arrow keys are used to move to a box then the Space Bar is pressed to reveal the number behind it. The student can play against the computer or another player. Concentration has three levels: Beginner, Intermediate and Advanced.





Chomp if equal to .16

.16 x 1	.04 x 4	.2 x .8	4 x .04
.02 x 8	6 x .04	4.8 x .1	.02 x .8
1.6 x .1	.2 x .8	.04 x 4	.16 x 1
16 x .1	1 x 1.6	.4 x .4	16 x .001

Time left

TEACHER OPTIONS

1. Press Control-S to turn the sound "off" or "on" at any point in the program.
2. Press Control-A to get into the teacher management at the main menu.

   A. The teacher can turn the Decimal Division operation "Off" and work only with the Multiplication activity. Within the Multiplication activity several modifications can be made by moving the highlighted box with the arrow keys and pressing the Return key:

      1. Select the number of problems from 5-25
      2. Select the Mastery percentage from 0%-100%
      3. Select the problem types: (See screen or manual)
         A: DECIMAL TIMES WHOLE NUMBER
         B: DECIMAL TIMES DECIMAL
         C: ZEROS ADDED TO THE PRODUCT
         D: MULTIPLY BY POWERS OF 10
         E: MONEY PROBLEMS (EXACT)
         F: MONEY PROBLEMS (ROUNDING)

   B. The teacher can change the "Regroup" phrases. The phrases can be changed to "rename", "carry" or "trade". These phrases will appear on the students screen during the problem solving process.

   C. The following game modifications can be made:

      1. The games can be turned "on" or "off".
      2. The number of games allowed following a set of problems can be changed. The range is 1-9.
      3. Other modifications specific to the games can be made.

SUGGESTIONS

1. Leave the sound "on" if it does not distract other students. Sound is an important part of the game and the feedback lets the student know what is happening that he might not otherwise notice.

2. Modify the problem types and phrases to the ones that the student has practiced.

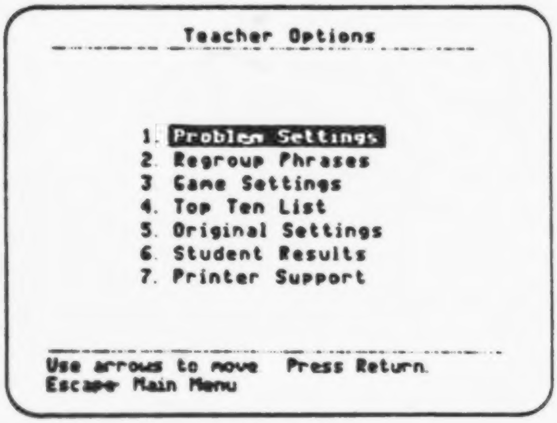
3. Limit the number of games to keep a student on task with the math problems.
4. Review the games with the students prior to the learning activity.

5. D.T.A. Applications

Warm-up
Independent Practice
Guided Practice

Vocabulary: Regroup, Carry, Rename, Trade

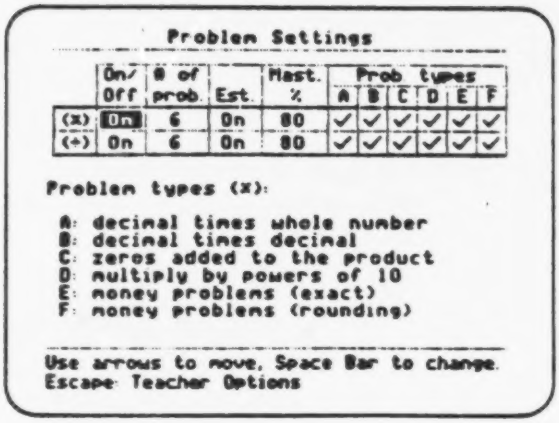
5. See the MECC manual for further information.



Teacher Options

1. Problem Settings
2. Regroup Phrases
3. Game Settings
4. Top Ten List
5. Original Settings
6. Student Results
7. Printer Support

Use arrows to move Press Return.
Escape Main Menu



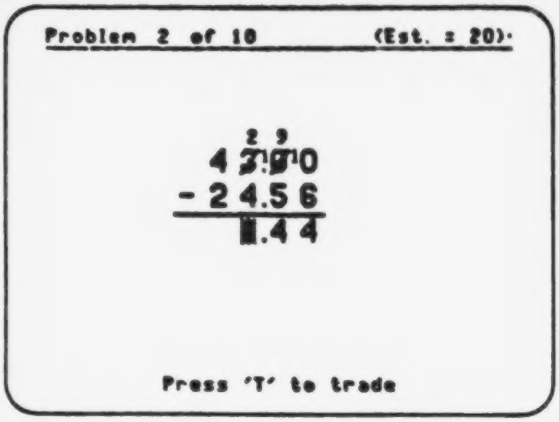
Problem Settings

	On/ Off	# of prob.	Est.	Mast. %	Prob types A	B	C	D	E	F
(x)	On	6	On	80	✓	✓	✓	✓	✓	✓
(÷)	On	6	On	80	✓	✓	✓	✓	✓	✓

Problem types (x):

A: decimal times whole number
B: decimal times decimal
C: zeros added to the product
D: multiply by powers of 10
E: money problems (exact)
F: money problems (rounding)

Use arrows to move, Space Bar to change.
Escape Teacher Options


Problem 2 of 10 (Est. = 20)

Press 'T' to trade

SOFTWARE SUMMARY

Company: MECC A-207
Title: CONQUERING DECIMALS
Activity: SUBTRACTION

OBJECTIVES:

MFMT 2.1.9 Subtract Decimals

SKILL: SD1 Subtract two numbers with one decimal place without regrouping
SD2 Subtract two numbers with one decimal place with regrouping
SD3 Subtract two numbers with two decimal places without regrouping
SD4 Subtract two numbers with two decimal places with regrouping

Does not work on the Apple II+

ACTIVITY SUMMARY

Students are presented with decimal subtraction problems that may require regrouping. The teacher can make the following modifications to the program: the amount of problems for the student to work on in a set, the types of problems in each set, the option to estimate the answer before working on it, the regroup phrases and whether a game is played at the completion of each set or not.

Students enter in their response to a problem by pressing the number keys, an "R" or a "B" for regrouping or borrowing then Return. (Return is pressed after the complete answer has been entered) The program does not provide a way to generate isolated problems that do or do not require regrouping. The decimal point is automatically placed in the sum position when the problem is presented.

For a correct sum on the first try, the students will see a positive message: "Very good! You made no mistakes." If the students make a mistake and eventually complete the problem, the feedback is "Right." There is no feedback until the students enter in the full answer and then press Return.

When the students enter an incorrect sum the feeback provides check marks under the numbers in the sum that are incorrect. There is also written feedback that says: "Wrong. Please try again.

If the students respond incorrectly twice, the program responds by guiding them through the problem step by step. A line crosses out the number from where borrowing is necessary and the students enter the new number. Next the students enter the carrry number in the correct place. The students have two chances to subtract this column of numbers. If they are incorrect both times they are further assisted with a number line and the written statement "That number is still wrong. Maybe the number line can help..." If the student continues to respond incorrectly, the sum is eventually given.

When the students complete a set, they are given a scoring frame and three options.

```
     EX.                SUBTRACTION

     Problems worked........................5
     Number of problems
     right on first try.....................5

                       GOOD JOB!
You Can:
     1.  Do more (-) problems
     2.  Play a game
     3.  Return to the main menu
```

There are two decimal problem solving games that the students can choose to play: Decimal Dash and Misplaced Decimals.

Decimal Dash is a game that combines the adding or subtracting of decimal numbers with stratagy. Students choose to be the "tortoise" or the "hare" and can race against the computer or another student. They use the arrow keys to select two decimal numbers that will give a sum or difference that will gain distance on the race course. The students choose numbers that will bring them to the end of the course before their opponent. There are traps and short cuts that the game directions describe.

Misplaced Decimals is a game in which students quickly try to rearrange decimal points in a number sentence to make the expression true. More than one decimal point may be moved and there are four possible solutions per problem. The students use the arrow (directional) keys to move the decimal point and the **Space Bar** to place it.

TEACHER OPTIONS

1. Press Control-S to turn the sound "off" or "on" at any point in the program.
2. Press Control-A to get into the teacher management at the main menu.

   A. The teacher can turn the Addition operation activity "Off" and leave only Subtraction. Within the Subtraction activity several modifications can be made by moving the highlighted box with the arrow keys and pressing the Return key:

      1. Select the number of problems from 5-25
      2. Select the use of estimation or not
      3. Select the Mastery percentage from 0%-100%
      4. Select the Problem types:
      A: SUBTRACT DECIMAL NUMBERS WITH TENTHS ONLY
      B: SUBTRACT DECIMAL NUMBERS WITH HUNDREDTHS ONLY
      C. SUBTRACT DECIMAL NUMBERS WITH THOUSANDTHS ONLY
      D. SUBTRACT DECIMAL NUMBERS WITH THENTHS, HUNDREDTHS, AND THOUSANDTHS MIXED.
      E. SUBTRACT A DECIMAL NUMBER FROM A WHOLE NUMBER
      F. SUBTRACT A DECIMAL NUMBER USING MONEY AMOUNTS

   B. The teacher can change the "Regroup" Phrases. The phrases can be changed to "rename", "regroup", "borrow" or "trade." These phrases will appear on the screen during the problem solving process.

   C. The following game modifications can be made:

      1. The games can be turned "on" or "off".
      2. Access to games can occur after finishing a set, after mastering a set, from the main menu or not allowed.

SUGGESTIONS

1. Leave the sound on if it does not distract other students. Sound can be an important part of the game and the feedback lets the student know what is happening that he might not otherwise notice.

2. Modify the problem types and phrases to the ones that the student has had practice with.

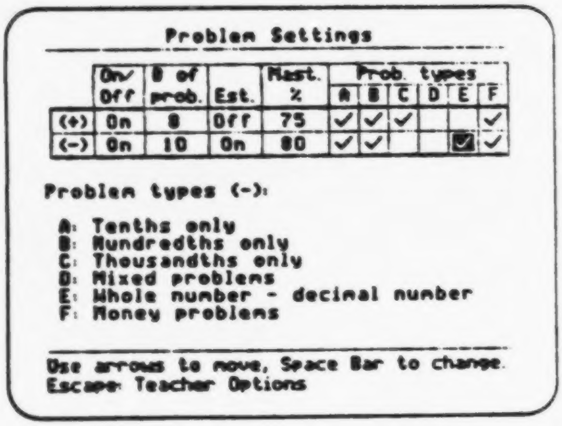
3. A. Limit the amount of games to keep a student on task with the math problems.

B. Review the games with the students prior to the learning activity. The directions may be difficult to understand.

4. D.T.A. Applications

Warm-up (set of 8-10 problems)
Guided Practice
Independent Practice

Vocabulary: Regroup, Borrow, Rename



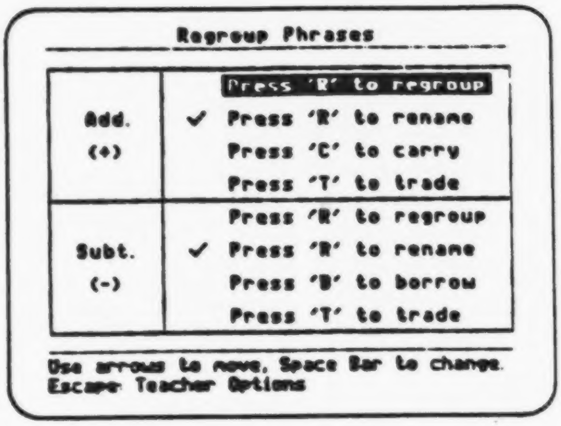
Problem Settings

	On/ Off	# of prob.	Est.	Mast. %	Prob. types A	B	C	D	E	F
(+)	On	8	Off	75	✓	✓	✓			✓
(-)	On	10	On	80	✓	✓			✓	✓

Problem types (-):

A: Tenths only
B: Hundredths only
C: Thousandths only
D: Mixed problems
E: Whole number - decimal number
F: Money problems

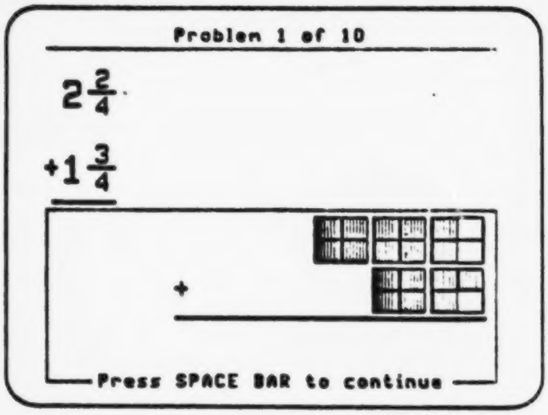
Use arrows to move, Space Bar to change.
Escape: Teacher Options



Regroup Phrases

Add. (+)		Press 'R' to regroup
	✓	Press 'R' to rename
		Press 'C' to carry
		Press 'T' to trade
Subt. (-)		Press 'R' to regroup
	✓	Press 'R' to rename
		Press 'B' to borrow
		Press 'T' to trade

Use arrows to move, Space Bar to change.
Escape: Teacher Options



Problem 1 of 10

$2\frac{2}{4}$

$+1\frac{3}{4}$

+

Press SPACE BAR to continue

SOFTWARE SUMMARY

Company: MECC A-204
Title: Conquering Fractions
Activity: Addition

OBJECTIVES:

MFMT: 2.1.5 Add Mixed Numbers

SKILLS:
- A1 Find a common denominator or lowest common denominator
- A2 Rename fractions to a given denominator
- A3 Add fractions with like denominators
- A4 Add fractions with unlike denominators
- A5 Add mixed numbers with like denominators
- A6 Add mixed numbers with unlike denominators

NOTE: Does not run on the Apple II+

ACTIVITY SUMMARY

The students begin this program like most MECC programs by entering in their first and last name. They are then presented with fractions and mixed number addition problems. The level of difficulty, as with many other variables is decided by the teacher in the Teacher Options section of the program. There are two instructional games in this program that are related to the skills above. Again, the teacher can decide when the students can access these games in the Teacher Options section.

Students enter in their response to a problem by pressing the number keys, the arrow keys and the Return key. The student must carefully watch the location of the "cursor" (the blinking square) to see which number to enter in. To correct a mistake, the student may use the arrow keys (or I, J, K, and M for II+ users) to back up and change the entry. Once they are satisfied with their entry they press the Return key and their answer is checked.

For a correct sum on the first try the student sees a positive message: "Very good", "You made no mistakes." If the student makes several mistakes and eventually completes the problem the feedback is simply "Right" or "correct." There is helpful feedback with each number they enter incorrectly (after the student presses Return) .

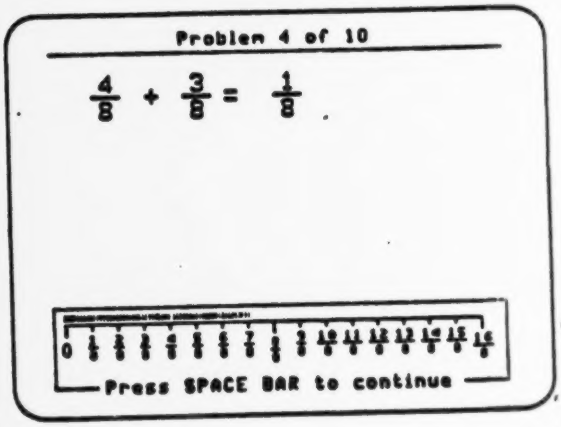
Any time the computer is waiting for a response the student can press the "V" key to "view" a visual representation of the problem. For example, if the student is looking at 2 1/2 + 3, they can press "V" to see two sets of boxes appropriately divided and shaded to represent the problem.

When an incorrect answer is entered twice, the program will give them a written "hint" that appears at the bottom of the screen. For example, if the student adds the denominators the hint is: "These fractions have like denominators. Add only the numerators." If they answer incorrectly again further help in the form of a visual numberline is given.

If the student must quit the program before completing a set of problems or reaching the mastery criteria, pressing the "Escape" key twice will give them a summary of their session and will save their results but access to the games is not allowed. If they complete a set of problems the students will see the same results record:

```
Ex.  Problems worked     10
     Right on first try  10
        Good Job!

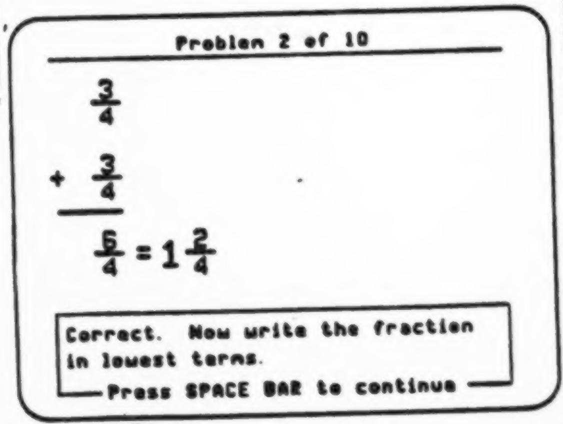
You can:
     1. Do more (+) problems
     2. Play Fraction Dash
     3. Play Fraction Chompers
     4. Return to the main menu
```



Problem 4 of 10

$\frac{4}{8} + \frac{3}{8} = \frac{1}{8}$

Press SPACE BAR to continue



Problem 2 of 10

$$\begin{array}{r} \frac{3}{4} \\ + \frac{3}{4} \\ \hline \frac{6}{4} = 1\frac{2}{4} \end{array}$$

Correct. Now write the fraction in lowest terms.

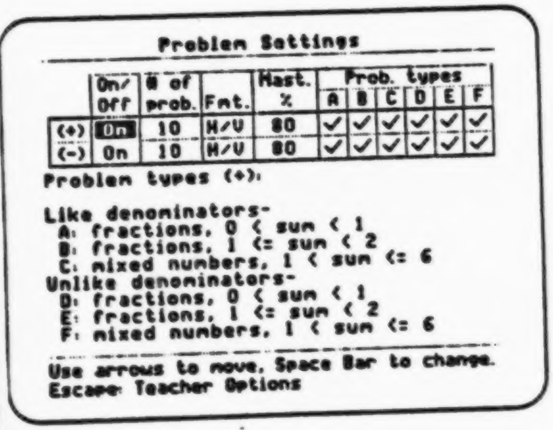
Press SPACE BAR to continue

TEACHER OPTIONS

1. Press Control-S to turn the sound off or on at any point in the program.
2. Press Control-A at the main menu to get into the teacher management options.

3. The teacher can choose up to six problem settings:
   - Type A: Problems have two proper fractions with the same denominator. All sums are in the range of 0<N<1.
   - Type B: Problems have two proper fractions with the same denominator. All sums are in the range of 1≤N<2. The sum is first written as an improper fraction and then as a mixed number or a whole number.
   - Type C: Problems involve combinations of mixed numbers, whole numbers, and proper fractions with the same denominator. All sums are in the range 1<N≤6.
   - Type D: Problems have two proper fractions with different denominators. All addends are completely reduced. All sums are in the range of 0<N<1.
   - Type E: Problems have two proper fractions with different denominators. All addends are completely reduced. All sums are in the range of 1<N<2. The sum is first written as an improper fraction and then as a mixed number.
   - Type F: Problems have a mixed number and a proper fraction, or two mixed numbers, with different denominators. All sums are in the range of 1<N≤6.

4. The teacher can also change the terminology used during the program, when or if the games can be played, or see the student results.



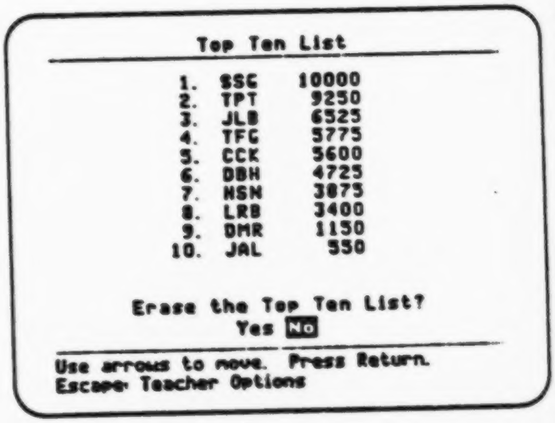
Problem Settings

	On/ Off	# of prob.	Fmt.	Mast. %	Prob. types					
					A	B	C	D	E	F
(+)	On	10	H/V	80	✓	✓	✓	✓	✓	✓
(-)	On	10	H/V	80	✓	✓	✓	✓	✓	✓

Problem types (+):

Like denominators-
A: fractions, 0 < sum < 1
B: fractions, 1 <= sum < 2
C: mixed numbers, 1 < sum <= 6
Unlike denominators-
D: fractions, 0 < sum < 1
E: fractions, 1 <= sum < 2
F: mixed numbers, 1 < sum <= 6

Use arrows to move, Space Bar to change.
Escape: Teacher Options



Top Ten List

1.	SSG	10000
2.	TPT	9250
3.	JLB	6525
4.	TFG	5775
5.	CCK	5600
6.	DBH	4725
7.	MSN	3875
8.	LRB	3400
9.	DMR	1150
10.	JAL	550

Erase the Top Ten List?
Yes No

Use arrows to move. Press Return.
Escape: Teacher Options

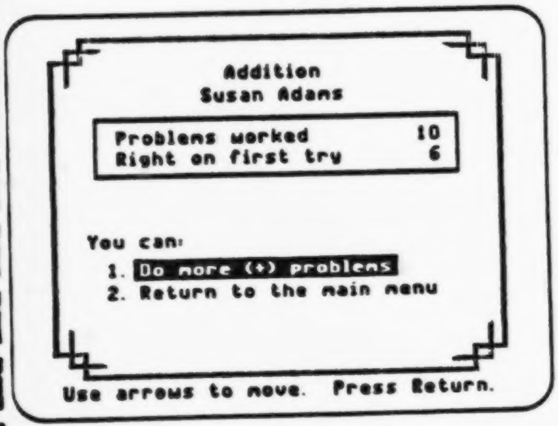
SUGGESTIONS

1. The sound should be left on if it is not a distraction to the rest of the students. Sound is often motivating and can be an indicator of the student's activity with the program.

2. Modify the problem types to those that the student has had practice with before.

3. A. In order to keep the student on task limit the amount of game time available. Turn the game options OFF until they have practiced the desired number of problems, then turn the games on again.
   B. Review the games with the students prior to the learning activity they are often quite challenging and there is extensive reading in the directions of the games.

4. DTA Applications:
   Guided practice
   Independent practice
   Vocabulary: numerator
   denominator
   least common denominator
   rename
   proper fraction
   improper fraction
   lowest terms
   hint
   view

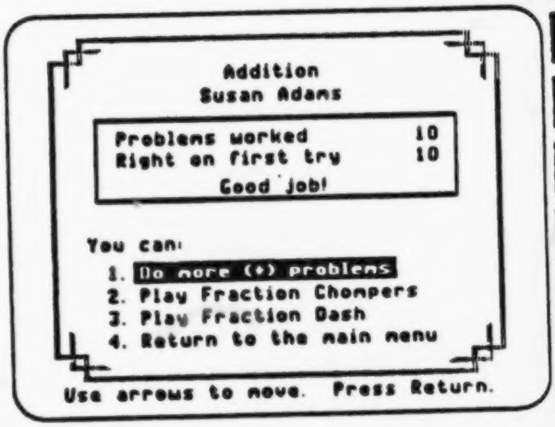


Addition
Susan Adams

Problems worked	10
Right on first try	6

You can:
1. Do more (+) problems
2. Return to the main menu

Use arrows to move. Press Return.



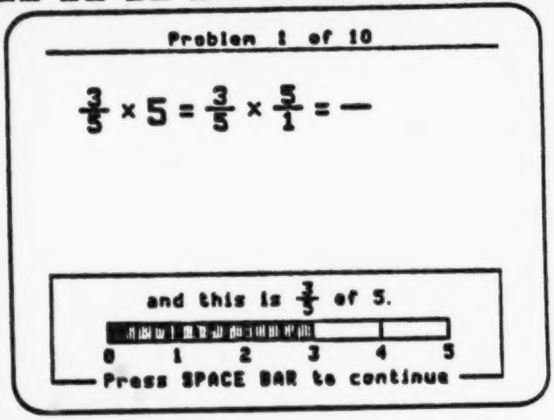
Addition
Susan Adams

Problems worked	10
Right on first try	10

Good job!

You can:
1. Do more (+) problems
2. Play Fraction Chompers
3. Play Fraction Dash
4. Return to the main menu

Use arrows to move. Press Return.



Problem 1 of 10

$\frac{3}{5} \times 5 = \frac{3}{5} \times \frac{5}{1} = -$

and this is $\frac{3}{5}$ of 5.

Press SPACE BAR to continue

SOFTWARE SUMMARY

Company: MECC A-205
Title: Conquering Fractions
Activity: Multiplication

OBJECTIVES:

MFMT: 2.1.7 Multiply a Whole Number by a Fraction

SKILLS:
R2 Reduce fractions to lowest terms
C1 Recognize proper and improper fractions and mixed numbers
C2 Convert improper fraction to mixed number
M1 Multiply a whole number by a fraction

NOTE: Does not run on the Apple II+

ACTIVITY SUMMARY

The students begin this program by entering in their first and last name. They are then presented with fractions and mixed number multiplication problems. The level of difficulty, as with many other variables is decided by the teacher in the Teacher Options section of the program. There are two instructional games in this program that are related to the skills above. Again, the teacher can decide when the students can access these games in the Teacher Options section.

Students enter in their response to a problem by pressing the number keys, the arrow keys and the Return key. The student must carefully watch the location of the "cursor" (the blinking square) to see which number to enter in. To correct a mistake, the student may use the arrow keys (or I, J, K, and M for II+ users) to back up and change the entry. Once they are satisfied with their entry they press the Return key and their answer is checked.

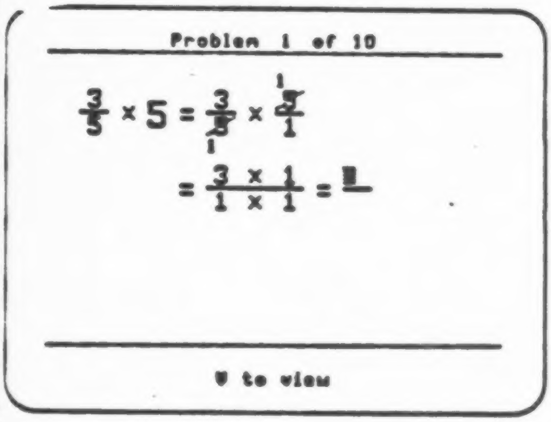
Any time the computer is waiting for a response the student can press the "V" key to "view" a visual representation of the problem. For example, if the student is looking at 2 1/2 x 3, they can press "V" to see a numberline that represents the problem. When there is an opportunity for cancellation the student can press "S" for shortcut. In this option they use the arrow keys to move the cursor to the location where the new values should be entered. All problems are presented in a horizontal format. To help the students begin, an arrow is located above the first fraction to be renamed. The arrow points to the location that the new fraction should be entered. The denominator of the improper fraction is always given.

For a correct answer on the first try the student will see a positive message: "Very good you made no mistakes". If the student makes several mistakes and eventually completes the problem the feedback is simply "Right" or "correct."

When an incorrect answer is entered twice, the program will give them a written "hint" that appears at the bottom of the screen. If they continue with incorrect answers the program will provide the answer. If the student must quit the program before completing a set of problems or reaching the mastery criteria, pressing the "Escape" key twice will give them a summary of their session and will save their results but access to the games is not allowed. If they complete a set of problems the students will see the same results record:

```
Ex.  Problems worked     10
     Right on first try 10
        Good Job!

You can:
     1. Do more (x) problems
     2. Play Fraction Dash
     3. Play Fraction Chompers
     4. Return to the main menu
```

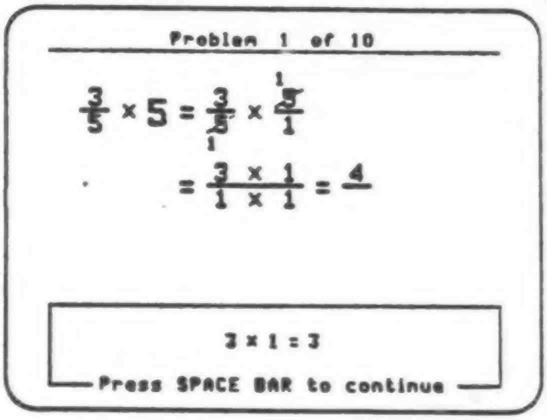


Problem 1 of 10

$$\frac{3}{5}\times 5 = \frac{3}{\underset{1}{\cancel{5}}}\times\frac{\overset{1}{\cancel{5}}}{1}$$

$$= \frac{3\times 1}{1\times 1} = \underline{▮}$$

▼ to view



Problem 1 of 10

$$\frac{3}{5}\times 5 = \frac{3}{\underset{1}{\cancel{5}}}\times\frac{\overset{1}{\cancel{5}}}{1}$$

$$= \frac{3\times 1}{1\times 1} = \underline{4}$$

3 x 1 = 3

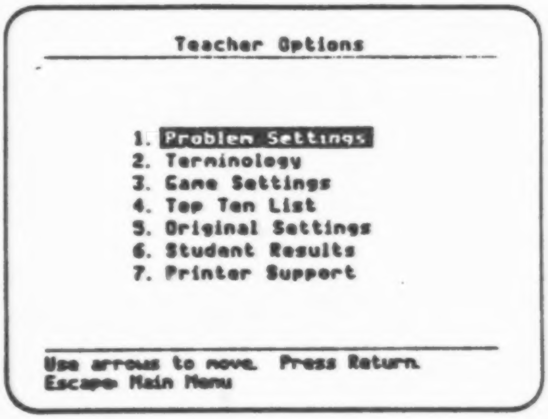
Press SPACE BAR to continue

TEACHER OPTIONS

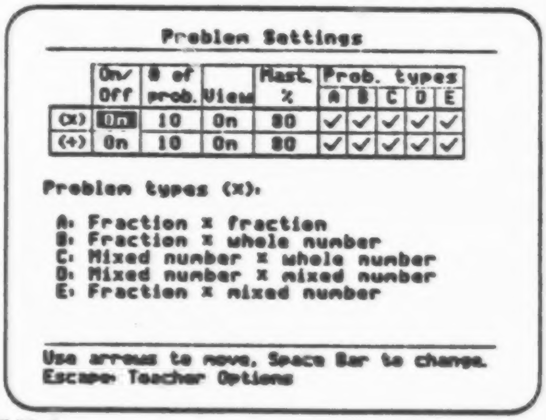
1. Press Control-S to turn the sound off or on at any point in the program.
2. Press Control-A at the main menu to get into the teacher management options.

3. The teacher can choose up to six problem settings:
    - Type A: Problems involve multiplying a fraction by a fraction with numerators 1 through 8 and denominators 2 through 9.
    - Type B: Problems involve multiplying a fraction by a whole number with numerators 1 through 8, denominators 2 through 9, and whole numbers 2 through 9.
    - Type C: These problems involve multiplying a mixed number by a whole number with the fraction portion of mixed numbers restricted to numerators 1 through 8, denominators 2 through 9, whole-number portions 1 through 3, and whole numbers 2 through 6.
    - Type D: Problems involve multiplying a mixed number by a mixed number with the fraction portion of mixed numbers restricted to numerators 1 through 8, denominators 2 through 9, and whole-number portions 1 through 4.
    - Type E: Problems involve multiplying a fraction by a mixed number with numerators 1 through 8, denominators 2 through 9, and whole-number portions of mixed numbers 1 through 4.

4. While in this portion of the program, the teacher can also change the terminology used during the program, when or if the games can be played, or see the student results.



Use arrows to move. Press Return.
Escape: Main Menu



	On/ Off	# of prob.	View	Mast. %	Prob. types				
					A	B	C	D	E
(x)	On	10	On	80	✓	✓	✓	✓	✓
(+)	On	10	On	80	✓	✓	✓	✓	✓

Problem types (x):

A: Fraction x fraction
B: Fraction x whole number
C: Mixed number x whole number
D: Mixed number x mixed number
E: Fraction x mixed number

Use arrows to move, Space Bar to change.
Escape: Teacher Options

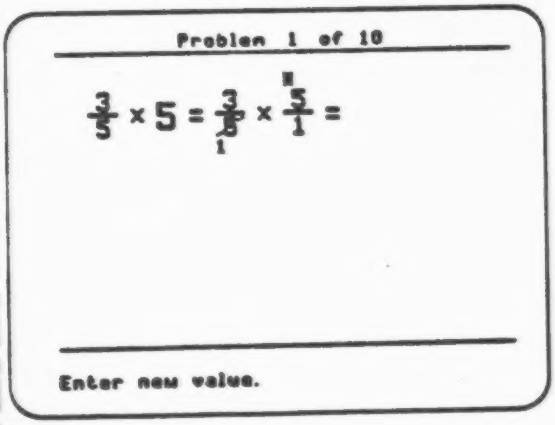
SUGGESTIONS

1. The sound should be left on if it is not a distraction to the rest of the students. Sound is often motivating and can be an indicator of the student's activity with the program.

2. Modify the problem types to those that the student has had practice with before.

3. A. In order to keep the student on task limit the amount of game time available. Turn the game options OFF until they have practiced the desired number of problems, then turn the games on again.
   B. Review the games with the students prior to the learning activity they are often quite challenging and there is extensive reading in the directions of the games.

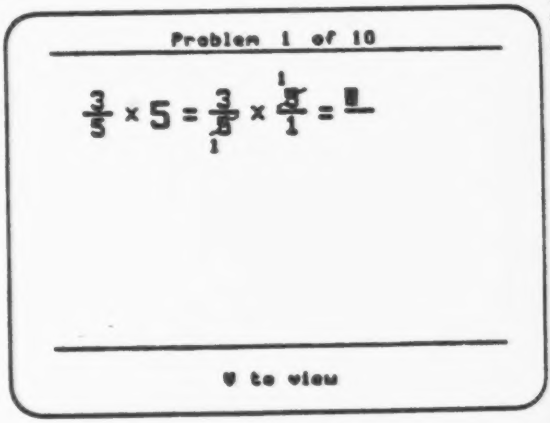
4. DTA Applications:
   Guided practice
   Independent practice
   Vocabulary: numerator
   denominator
   multiple
   rename
   proper fraction
   improper fraction
   lowest terms
   hint
   view
   Regroup/Rename



Problem 1 of 10

$\frac{3}{5} \times 5 = \frac{3}{\underset{1}{\cancel{5}}} \times \frac{5}{1} =$

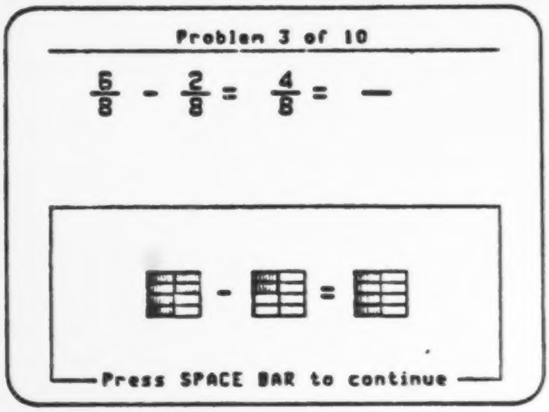
Enter new value.



Problem 1 of 10

$\frac{3}{5} \times 5 = \frac{3}{\underset{1}{\cancel{5}}} \times \frac{\overset{1}{\cancel{5}}}{1} = \_$

V to view


Problem 3 of 10

$\frac{6}{8} - \frac{2}{8} = \frac{4}{8} = —$

Press SPACE BAR to continue

SOFTWARE SUMMARY

Company: MECC A-204
Title: Conquering Fractions
Activity: Subtraction

OBJECTIVES:

MFMT: 2.1.6 Subtract Mixed Numbers

SKILLS: R2 Reduce fractions to lowest terms
- A1 Find a common denominator or lowest common denominator
- S3 Subtract fractions with like denominators
- S4 Subtract fractions with unlike denominators
- S5 Subtract mixed numbers with like denominators
- S6 Subtract mixed numbers with unlike denominators

NOTE: Does not run on the Apple II+

ACTIVITY SUMMARY

The students begin this program by entering in their first and last name. They are then presented with fractions and mixed number subtraction problems. The level of difficulty, as with many other variables is decided by the teacher in the Teacher Options section of the program. There are two instructional games in this program that are related to the skills above. Again, the teacher can decide when the students can access these games in the Teacher Options section.

Students enter in their response to a problem by pressing the number keys, the arrow keys and the Return key. The student must carefully watch the location of the "cursor" (the blinking square) to see which number to enter in. To correct a mistake, the student may use the arrow keys (or I, J, K, and M for II+ users) to back up and change the entry. Once they are satisfied with their entry they press the Return key and their answer is checked.

For a correct sum on the first try the student sees a positive message: "Very good", "You made no mistakes." If the student makes several mistakes and eventually completes the problem the feedback is simply "Right" or "correct." There is helpful feedback with each number they enter incorrectly (after the student presses Return) .

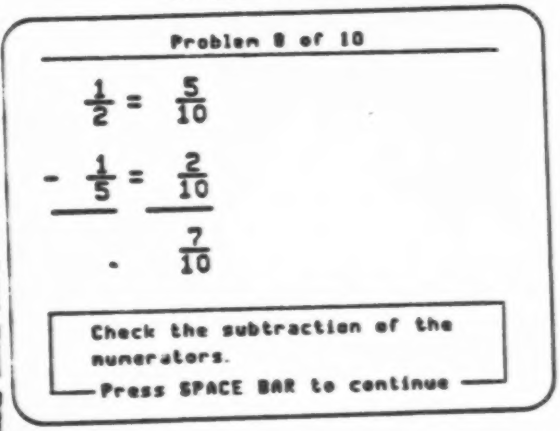
Any time the computer is waiting for a response the student can press the "V" key to "view" a visual representation of the problem. For example, if the student is looking at 2 1/2 + 3, they can press "V" to see two sets of boxes appropriately divided and shaded to represent the problem. If the problem calls for regrouping the student can press "R" for regroup and the problem will be adjusted for the student to do the math.

When an incorrect answer is entered twice, the program will give them a written "hint" that appears at the bottom of the screen. For example, if the student adds the denominators the hint is: "These fractions have like denominators. Add only the numerators." If they answer incorrectly again further help in the form of a visual numberline is given.

If the student must quit the program before completing a set of problems or reaching the mastery criteria, pressing the "Escape" key twice will give them a summary of their session and will save their results but access to the games is not allowed. If they complete a set of problems the students will see the same results record:

```
Ex.  Problems worked     10
     Right on first try  10
        Good Job!

You can:
        1. Do more (-) problems
        2. Play Fraction Dash
        3. Play Fraction Chompers
        4. Return to the main menu
```



Problem 8 of 10

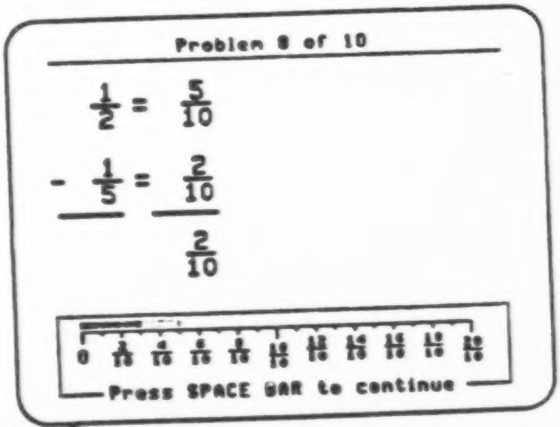
$$\frac{1}{2} = \frac{5}{10}$$

$$- \frac{1}{5} = \frac{2}{10}$$

$$\frac{7}{10}$$

Check the subtraction of the numerators.

Press SPACE BAR to continue



Problem 8 of 10

$$\frac{1}{2} = \frac{5}{10}$$

$$- \frac{1}{5} = \frac{2}{10}$$

$$\frac{2}{10}$$

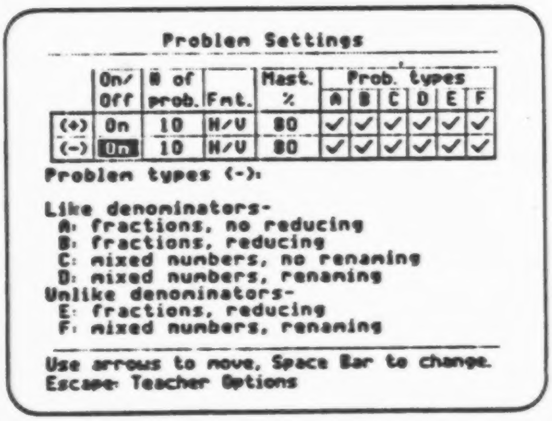
Press SPACE BAR to continue

TEACHER OPTIONS

1. Press Control-S to turn the sound off or on at any point in the program.
2. Press Control-A at the main menu to get into the teacher management options.

3. The teacher can choose up to six problem settings:
   - Type A: Problems have two proper fractions with the same denominator. All sums are in the range of $0 \leq N < 1$.
   - Type B: Problems have two proper fractions with the same denominator. All differences require reducing and all are in the range of $0 < N < 1$.
   - Type C: Problems involve combinations of mixed numbers, whole numbers, and proper fractions with the same denominator. Some reducing, but no regrouping, is involved. All differences are in the range of $0 \leq N \leq 6$.
   - Type D: Problems involve combinations of mixed numbers, whole numbers, and proper fractions with the same denominator. Both regrouping and reducing may be involved. All differences are in the range of $0 < N \leq 6$.
   - Type E: Problems have two proper fractions with different denominators. The difference may require reducing. All differecnces are in the range of $0 < N < 1$.
   - Type F: Problems have a mixed number and a proper fraction, or two mixed numbers, with different denominators. Both regrouping and reducing are involved. All differences are in the range of $0 < N \leq 6$.

4. The teacher can also change the terminology used during the program, when or if the games can be played, or see the student results.



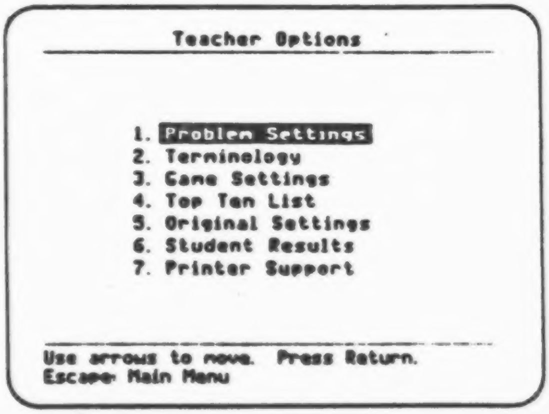
Problem Settings

	On/ Off	# of prob.	Fmt.	Mast. %	Prob. types					
					A	B	C	D	E	F
(+)	On	10	H/V	80	✓	✓	✓	✓	✓	✓
(-)	On	10	H/V	80	✓	✓	✓	✓	✓	✓

Problem types (-):

Like denominators-
 A: fractions, no reducing
 B: fractions, reducing
 C: mixed numbers, no renaming
 D: mixed numbers, renaming
Unlike denominators-
 E: fractions, reducing
 F: mixed numbers, renaming

Use arrows to move, Space Bar to change.
Escape: Teacher Options



Teacher Options

1. Problem Settings
2. Terminology
3. Game Settings
4. Top Ten List
5. Original Settings
6. Student Results
7. Printer Support

Use arrows to move. Press Return.
Escape: Main Menu

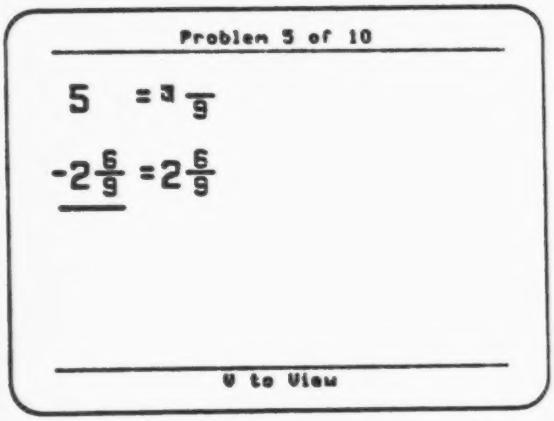
SUGGESTIONS

1. The sound should be left on if it is not a distraction to the rest of the students. Sound is often motivating and can be an indicator of the student's activity with the program.

2. Modify the problem types to those that the student has had practice with before.

3. A. In order to keep the student on task limit the amount of game time available. Turn the game options OFF until they have practiced the desired number of problems, then turn the games on again.
   B. Review the games with the students prior to the learning activity they are often quite challenging and there is extensive reading in the directions of the games.

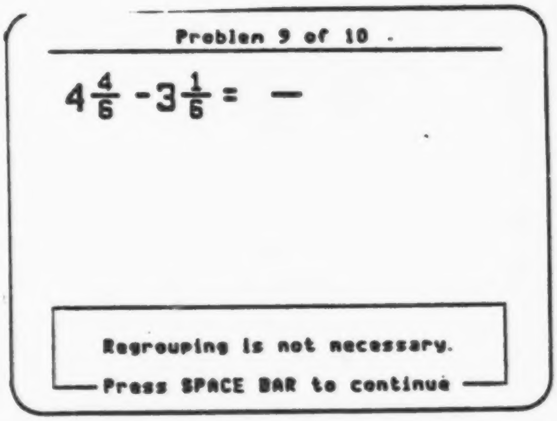
4. DTA Applications:
   Guided practice
   Independent practice
   Vocabulary: numerator
   denominator
   least common denominator
   rename
   proper fraction
   improper fraction
   lowest terms
   hint
   view
   Regroup/Rename



Problem 5 of 10

$$\begin{array}{r} 5 \\ \underline{-2\frac{6}{9}} \end{array} \quad \begin{array}{l} = 3\frac{\ }{9} \\ = 2\frac{6}{9} \end{array}$$

V to View



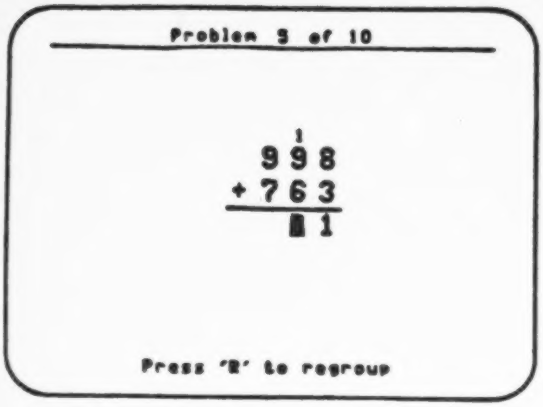
Problem 9 of 10

$4\frac{4}{6} - 3\frac{1}{6} = \ —$

Regrouping is not necessary.

Press SPACE BAR to continue

SOFTWARE SUMMARY



Problem 5 of 10

```
  1
 998
+763
 ▮1
```

Press 'R' to regroup

Company: MECC A-201
Title: CONQUERING WHOLE NUMBERS
Activity: ADDITION

OBJECTIVES:

MFMT 2.1.1 Add Whole Numbers
SKILL: A10 ADD TWO NUMBERS WITH UP TO 4 DIGITS EACH, 1-3 REGROUPINGS.
A12 ADD THREE NUMBERS WITH UP TO 3 OR 4 DIGITS EACH, REGROUPING.

ACTIVITY SUMMARY

Students are presented with addition problems that require regrouping. The teacher has the option of choosing the amount of problems for the student to work on in a set. The teacher also has the option of selecting the types of problems in each set and whether a game is played at the completion of each set or not.

. Students enter in their response to the problem by pressing the number keys, an "R" or a "C" for regrouping or carrying, then Return. (Return is pressed after the complete answer has been entered) They enter in the ones, tens, hundreds and thousands answer.

For a correct sum on the first try, the students see a positive message: "Very good! You made no mistakes." If a student makes a mistake and eventually completes the problem, the feedback is "Right." There is no feedback until the student enters in the full answer and then presses Return.

When the students enter an incorrect sum the feedback provides check marks under the numbers in the sum that are incorrect. There is also written feedback that says: "Wrong. Please try again".

If the students respond incorrectly twice, the program then assists them by guiding them through the problem step by step. The tens, hundreds and thousands columns fade and the ones column is highlighted. The students have two chances to add this column of numbers. If they are incorrect both times they are further assisted with "dot" graphics that represent the numbers. Students need only count the dots at this point. When they enter the correct answer, the next column is highlighted.

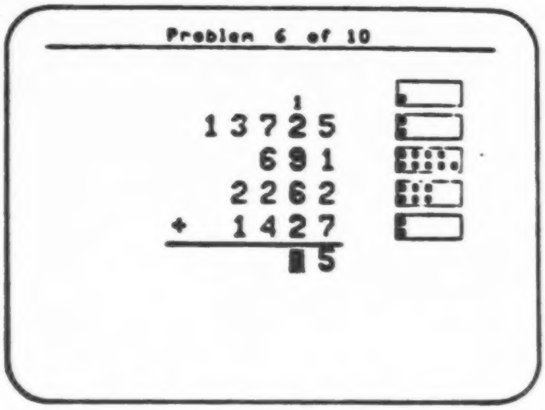
When the students complete a set, they are given a scoring frame and three options.

EX. ADDITION

Problems worked........................5
Number of problems
right on first try.....................5

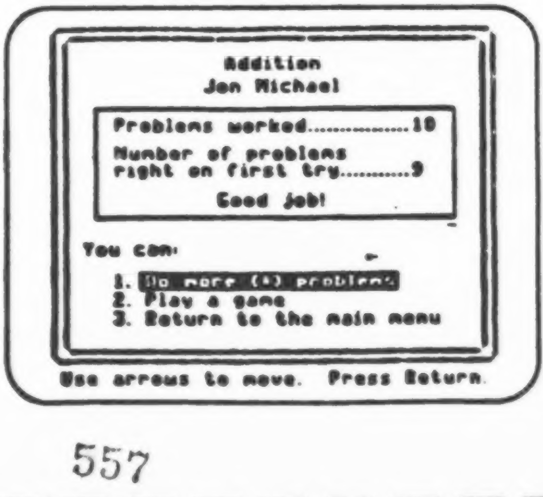
GOOD JOB!

You Can:
1. Do more (+) problems
2. Play a game
3. Return to the main menu



Problem 6 of 10

```
      1
  13725
    691
   2262
+  1427
-------
     ▮5
```



Addition
Jon Michael

Problems worked................10
Number of problems
right on first try...........9

Good Job!

You can:
1. Do more (+) problems
2. Play a game
3. Return to the main menu

Use arrows to move. Press Return.

TEACHER OPTIONS

1. Press Control-S to turn the sound "off" or "on" at any point in the program.
2. Press Control-A to get into the teacher management at the main menu.

   A. The teacher could turn all the other operations or activities "Off" except Addition. Within the Addition activity several modifications can be made by moving the highlighted box with the arrow keys and pressing the return key:

      1. Select the number of problems from 5-25
      2. Select the Mastery percentage from 0%-100%
      3. Select the Problem types:
      * ADD 3- OR 4-DIGIT ADDENDS WITH TWO REGROUPS;
      * ADD TWO 4-DIGIT ADDENDS WITH THREE REGROUPS;
      * ADD TWO 2-,3-, OR 4-DIGIT ADDENDS WITH AT LEAST ONE REGROUP TO A 9;
      * ADD THREE OR FOUR ADDENDS WITH FROM 3-5-DIGITS EACH AND HAVING TWO OR MORE REGROUPS

B. The teacher can change the "Regroup" Phrases. The phrases can be changed to "rename" or "carry". These phrases will appear on the screen during the problem solving process.

C. The following game modifications can be made:

   1. The game can be turned "on" or "off".
   2. The number of games allowed following a set of problems can be changed. Range is 1-9.
   3. Other modifications specific to the games can be made.

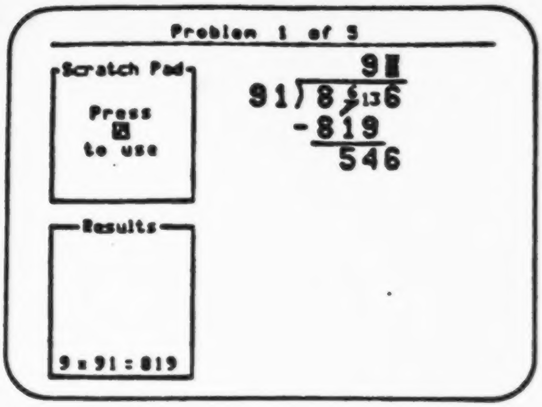
SUGGESTIONS

1. Leave the sound on if it does not distract other students. Sound is an important part of the game and the feedback lets the student know what is happening that he might not otherwise notice.
2. Modify the problem types and phrases to the ones that the student has had practice with.

3. A. Limit the amount of games to keep a student on task with the math problems.
   B. Review the games with the students prior to the learning activity. There is extensive reading involved in the directions.

4. D.T.A. Applications
   Warm-up
   Independent Practice
   Guided Practice
   Vocabulary: Regroup, Carry, Rename,

558



SOFTWARE SUMMARY

Company: MECC A-201
Title: CONQUERING WHOLE
NUMBERS
Activity: DIVISION

OBJECTIVES:

MFMT 2.1.4 Divide Whole Numbers
SKILL: D5 1-DIGIT DIVISOR INTO 3-DIGIT DIVIDEND, REMAINDERS POSSIBLE;
D9 2-DIGIT DIVISOR INTO 2-DIGIT DIVIDEND, REMAINDERS POSSIBLE;
D11 2-DIGIT DIVISOR INTO 4-DIGIT DIVIDEND, REMAINDERS POSIBLE;
D12 2-DIGIT DIVISOR INTO 5-DIGIT DIVIDEND, REMAINDERS POSSIBLE.

ACTIVITY SUMMARY

Students are presented with division problems that have possible remainders. The teacher has the option of selecting the amount of problems for the student to work on in a set. The teacher also has the option of selecting the types of problems in each set and whether a game is played at the completion of each set or not.

Students enter in their response to the problem by pressing the arrow keys to position the number, then the number keys. There is a scratch pad provided at the upper left hand corner of the screen. Students press "s" for scratch pad. In this square they can try a variety of multiplication facts to help them get the correct quotient. They press an "R" for regrouping then Return. (Return is pressed after the complete answer has been entered. Once this occurs they must press "s" again to get back into the scratch pad). The results of their multiplication is recorded in another square below the scratch pad. They can use the "Results" box to guide their choice of divisors.

For a correct sum on the first try, the students see a positive message: "Very good! You made no mistakes." If a student makes a mistake and eventually completes the problem, the feedback is "Right". There is no feedback until the student enters in the full answer and then presses Return.

When the student enters an incorrect quotient the feedback is: "That is not the right number. Please try again."

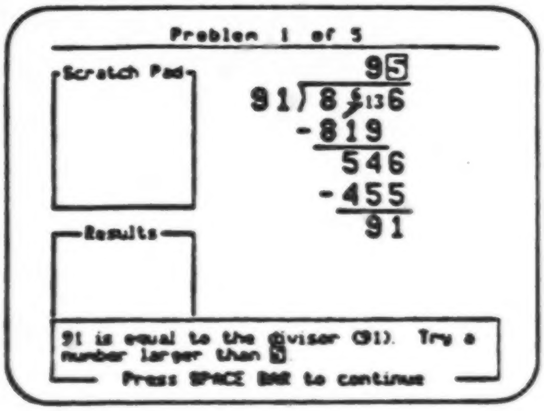
If the student responds incorrectly twice, the program then assists them by isolating the operation necessary at the bottom of the screen.

When students have completed the set of problems, they are provided with a scoring frame:

EX. DIVISION

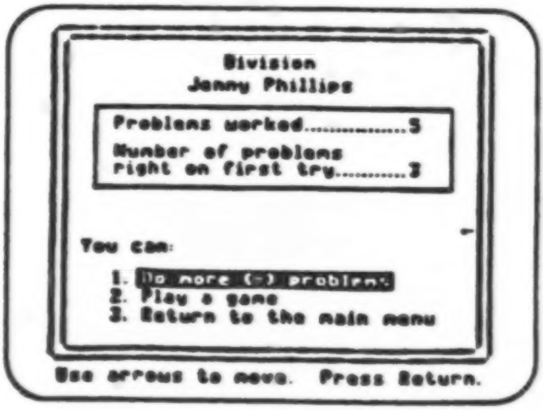
Problems worked........................5
Number of problems
Right on first try.....................3

You Can:
1. Do more (/) problems
2. Play a game
3. Return to the main menu


Problem 1 of 5
Scratch Pad
Results
95
91) 8 6 13 6
-819
546
-455
91

91 is equal to the divisor (91). Try a number larger than 5.

Press SPACE BAR to continue


Division
Jenny Phillips

Problems worked..............5
Number of problems
right on first try..........3

You can:
1. Do more (÷) problems
2. Play a game
3. Return to the main menu
Use arrows to move. Press Return.

TEACHER OPTIONS

1. Press Control-S to turn the sound "off" or "on" at any point in the program.
2. Press Control-A to get into the teacher management at the main menu.

   A. The teacher could turn all the other operations or activities "Off" except Division. Within the Division activity several modifications can be made by moving the highlighted box with the arrow keys and pressing the Return key:

      1. Select the number of problems from 5-25
      2. Select the Mastery percentage from 0%-100%
      3. Select the Problem types: (See screen or manual)
         - *DIVIDING A 3- OR 4-DIGIT DIVIDEND BY A 1-DIGIT DIVISOR WITH A REMAINDER POSSIBLE;
         - *DIVIDING A 2- TO 5-DIGIT DIVIDEND BY A 2-DIGIT DIVISOR WITH A REMAINDER POSSIBLE;
         - *DIVIDING A 4- OR 5 DIGIT DIVIDEND BY A 2-DIGIT DIVISOR WITH A REMAINDER POSSIBLE AND WITH THE QUOTIENT HAVING AN INTERNAL ZERO;
         - *DIVIDING A 3- OR 4- DIGIT DIVIDEND BY A 2-DIGIT DIVISOR WITH A REMAINDER POSSIBLE AND WITH THE QUOTIENT ENDING IN A ZERO.

      *THESE SKILLS EXTEND BEYOND MFMT REQUIREMENTS.

   B. The following game modifications can be made:

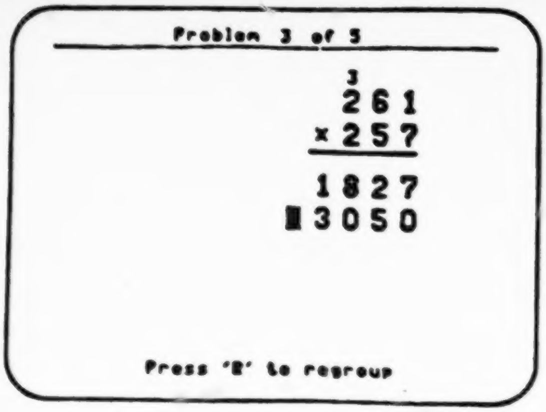
      1. The game can be turned "on" or "off".
      2. The number of games allowed following a set of problems can be changed. Range is 1-9.
      3. Other modifications specific to the games can be made.

SUGGESTIONS

1. Leave the sound "on" if it does not distract other students. Sound is an important part of the game and the feedback lets the student know what is happening that he might not otherwise notice.

2. a. Limit the amount of games to keep a student on task with the math problems.
   b. Review the games with the students prior to the learning activity. There is extensive reading involved in the directions and the games are challenging.

3. D.T.A. Applications
   Warm-up
   Independent Practice
   Guided Practice
   Vocabulary: Divisor, Dividend, Quotient



```
Problem 3 of 5

    3
  2 6 1
x 2 5 7

  1 8 2 7
▮3 0 5 0

Press 'R' to regroup
```

SOFTWARE SUMMARY

Company: MECC A-201
Title: CONQUERING WHOLE NUMBERS
Activity: MULTIPLICATION

OBJECTIVES:

MFMT 2.1.2 Multiply Whole Numbers
SKILL: M3 MULTIPLY 1 DIGIT BOTTOM NUMBER TIMES UP TO 4 DIGIT TOP NUMBER, NO REGROUPING;
M7 MULTIPLY 2 DIGIT BOTTOM NUMBER TIMES UP TO 4 DIGIT TOP NUMBER, REGROUPING.

ACTIVITY SUMMARY

Students are presented with multiplication problems that require regrouping. The teacher has the option of selecting the amount of problems for the students to work on in a set. The teacher also has the option of selecting the types of problems in each set and whether a game is played at the completion of each set or not.

Students enter in their response to the problem by pressing the number keys, an "R" or a "C" for regrouping or carrying, then Return. (Return is pressed after the complete answer has been entered) They enter in the ones, tens, hundreds and thousands answer in that order.

For a correct sum on the first try, the students see a positive message: "Very good! You made no mistakes." If a student makes a mistake and eventually completes the problem, the feedback is "Right". There is no feedback until the student enters in the full answer and then presses Return.

When the student enters an incorrect sum the feedback provides check marks under the numbers in the sum that are incorrect. There is also written feedback that says: "Wrong. Please try again".

If the student responds incorrectly twice, the program then assists them by guiding them through the problem step by step. The essential portion of the problem is highlighted. If the student makes multiplication errors a multiplication chart appears on screen to assist them. If they forget to add the "carry" the addition problem appears at the bottom of the screen.

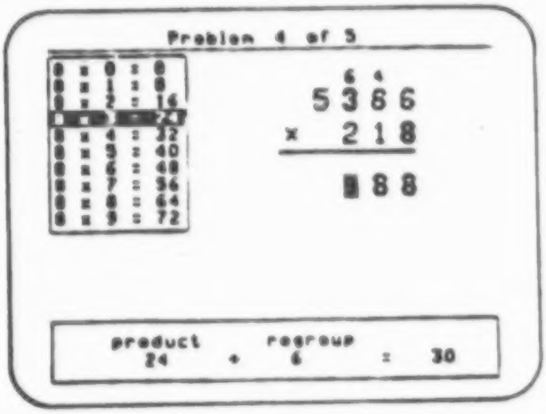
Ex. product regroup
0 + 3 = 3

When students have completed the set of problems, they are provided with a scoring frame:

EX. MULTIPLICATION

Problems worked........................5
Number of problems
right on first try.....................3

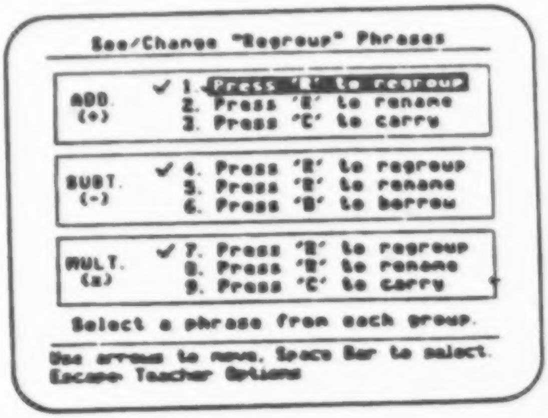
You Can:
1. Do more (x) problems
2. Play a game
3. Return to the main menu



```
Problem 4 of 5

8 x 0 = 0            6 4
8 x 1 = 8          5 3 6 6
8 x 2 = 16       x   2 1 8
8 x 3 = 24       ---------
8 x 4 = 32           █ 8 8
8 x 5 = 40
8 x 6 = 48
8 x 7 = 56
8 x 8 = 64
8 x 9 = 72

   product     regroup
     24     +     6       =    30
```



```
See/Change "Regroup" Phrases

ADD.    ✓ 1. Press 'R' to regroup
(+)       2. Press 'R' to rename
          3. Press 'C' to carry

SUBT.   ✓ 4. Press 'R' to regroup
(-)       5. Press 'R' to rename
          6. Press 'B' to borrow

MULT.   ✓ 7. Press 'R' to regroup
(x)       8. Press 'R' to rename
          9. Press 'C' to carry

Select a phrase from each group.

Use arrows to move, Space Bar to select.
Escape= Teacher Options
```

503

TEACHER OPTIONS

1. Press Control-S to turn the sound "off" or "on" at any point in the program.
2. Press Control-A to get into the teacher management at the main menu.

   A. The teacher could turn all the other operations or activities "Off" except Multiplication. Within the Multiplication activity several modifications can be made by moving the highlighted box with the arrow keys and pressing the Return key:

      1. Select the number of problems from 5-25
      2. Select the Mastery percentage from 0%-100%
      3. Select the Problem types: (See screen or manual)
         - *MULTIPLYING TWO FACTORS WITH 2- OR 3-DIGITS AND NO REGROUPING;
         - *MULTIPLYING A 2- TO 4-DIGIT NUMBER BY A 2-DIGIT NUMBER WITH REGROUPING;
         - *MULTIPLYING A 3- OR 4-DIGIT NUMBER BY A 3-DIGIT NUMBER WITH REGROUPING;
         - *MULTIPLYING A 3- OR 4-DIGIT NUMBER BY A 2- OR 3-DIGIT NUMBER WITH REGROUPING AND AT LEAST ONE FACTOR CONTAINING AN INTERNAL ZERO.

   B. The teacher can change the "Regroup" Phrases. The phrases can be changed to "rename" or "carry". These phrases will appear on the students screen during the problem solving process.

C. The following game modifications can be made:

   1. The game can be turned "on" or "off".
   2. The number of games allowed following a set of problems can be changed. Range is 1-9.
   3. Other modifications specific to the games can be made.

SUGGESTIONS

1. Leave the sound "on" if it does not distract other students. Sound is an important part of the game and the feedback lets the student know what is happening that he might not otherwise notice.

2. Modify the problem types and phrases to the ones that the student has had practice with.

3. a. Limit the amount of games to keep a student on task with the math problems.
   b. Review the games with the students prior to the learning activity. There is extensive reading involved in the directions and the games are challenging.

4. D.T.A. Applications
   Warm-up
   Independent Practice
   Guided Practice
   Vocabulary: Regroup, Carry, Rename,

5. See the MECC manual for further information.

Preparation

Because this is a reinforcement activity, it is assumed that the skills involved have already been taught to the students. Before allowing students to use the program, you should review the four types of problems that are available. If students are not ready for any of the types listed below, those types should be turned off using the Teacher Options.

Type A: These problems stress the procedure when multiplying with a 2- or 3-digit number. For this reason, there is no regrouping required.

Examples:

230	485	412	24
x 31	x 111	x 21	x 12

Type B: These problems have 2- to 4-digit multiplicands and 2-digit multipliers. Students will be required to regroup while working the problem.

Examples:

59	357	4912
x 36	x 78	x 93

Type C: These problems are slightly more difficult than type B in that they have 3- or 4-digit multiplicands and 3-digit multipliers. Students will be required to regroup while working this type of problem.

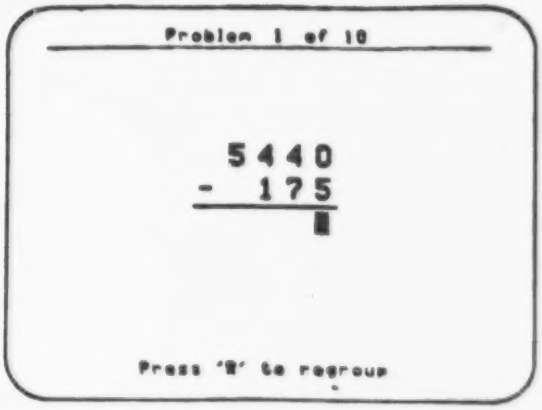
Examples:

529	4912
x 366	x 247

Type D: These problems involve multiplicands with 3- or 4-digits and multipliers with 2- or 3-digits. Also, at least one of the factors has an internal zero. Again, each problem will involve regrouping.

Examples:

805	9005	823
x 39	x 724	x 606



Problem 1 of 10

```
 5440
- 175
```

Press 'R' to regroup

SOFTWARE SUMMARY

Company: MECC A-201
Title: CONQUERING WHOLE NUMBERS
Activity: SUBTRACTION

OBJECTIVES:

MFMT 2.1.2 Subtract Whole Numbers
SKILL: S8 SUBTRACT TWO NUMBERS WITH UP TO 3 DIGITS EACH, ONE OR TWO REGROUPINGS;

S9 SUBTRACT TWO NUMBERS WITH UP TO 4 DIGITS EACH, ONE TO THREE REGROUPINGS.
*SKILLS GO BEYOND THE MFMT REQUIREMENTS BY INCLUDING MORE THAN TWO REGROUPINGS.

ACTIVITY SUMMARY

Students are presented with subtraction problems that require regrouping. The teacher has the option of selecting the amount of problems for the student to work on in a set. The teacher also has the option of selecting the types of problems in each set and whether a game is played at the completion of each set or not.

. Students enter in their response to the problem by pressing the number keys, an "R" or a "B" for regrouping or borrowing, then Return. (Return is pressed after the complete answer has been entered) They enter in the ones, tens then hundreds and thousands answer in that order.

For a correct sum on the first try, the students see a positive message: "Very good! You made no mistakes." If a student makes a mistake and eventually completes the problem, the feedback is "Right". There is no feedback until the student enters in the full answer and then presses Return.

When the student enters an incorrect sum the feedback provides check marks under the numbers in the sum that are incorrect. There is also written feedback that says: "Wrong. Please try again".

If the student responds incorrectly twice, the program then assists them by guiding them through the problem step by step. A line crosses out the number that the borrowing is necessary from. The students enter in the new number then the carry number over the next column to the right. This continues until the orginal number is large enough for subtraction to occcur. If they subtract incorrectly more than twice they are assisted with a number line and the written statement " That number is still wrong. Maybe the number line can help..." If the student continues to respond incorrectly, the sum is eventually given.

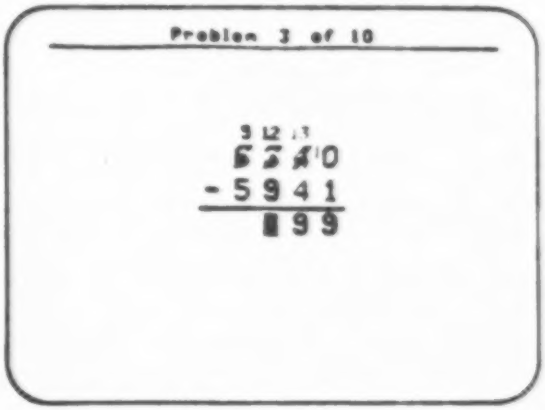
When the student completes a set, they are given a scoring frame and three options.

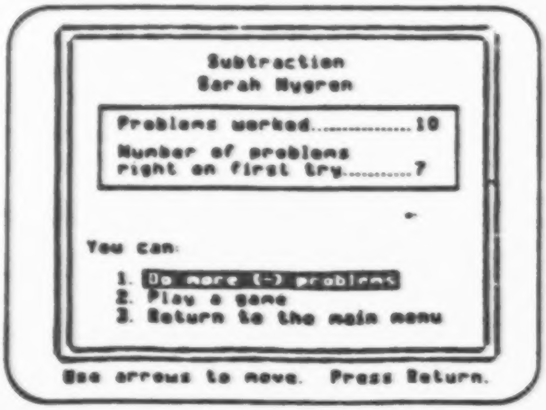
EX. SUBTRACTION

Problems worked.......................8
Number of problems
right on first try....................6

You Can:

1. Do more (-) problems
2. Play a game
3. Return to the main menu


Problem 3 of 10


Subtraction
Sarah Nygren

Problems worked..............10
Number of problems
right on first try..........7

You can:

1. Do more (-) problems
2. Play a game
3. Return to the main menu

Use arrows to move. Press Return.

TEACHER OPTIONS

1. Press Control-S to turn the sound "off" or "on" at any point in the program.
2. Press Control-A to get into the teacher management at the main menu.

   A. The teacher could turn all of the other operations or activities "Off" except Subtraction. Within the Subtraction activity several modifications can be made by moving the highlighted box with the arrow keys and pressing the Return key:

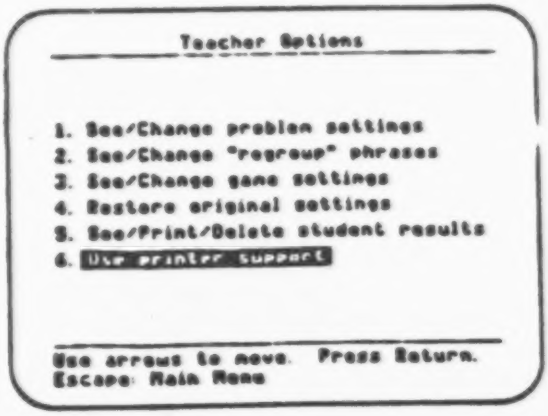
      1. Select the number of problems from 5-25
      2. Select the Mastery percentage from 0%-100%
      3. Select the Problem types: (See screen or manual)
         *SUBTRACTION WITH EXACTLY TWO REGROUPS NEEDED:
         *SUBTRACTION WITH EXACTLY THREE REGROUPS NEEDED:
         *SUBTRACTION INVOLVING MINUENDS WITH ONE OR MORE INTERNAL ZEROES AND REGROUPING ACROSS THE ZEROES REQUIRED:
         *SUBTRACTION INVOLVING MINUENDS ENDING IN ONE OR MORE ZEROES AND REGROUPING TO THE ZEROES REQUIRED.

      *SKILLS GO BEYOND THE MFMT REQUIREMENTS BY INCLUDING MORE THAN TWO REGROUPINGS.

   B. The teacher can change the "Regroup" Phrases. The phrases can be changed to "rename" or "borrow". These phrases will appear on the students screen during the problem solving process.

   C. The following game modifications can be made:

      1. The game can be turned "on" or "off".
      2. The number of games allowed following a set of problems can be changed. Range is 1-9.
      3. Other modifications specific to the games can be made.



Teacher Options

1. See/Change problem settings
2. See/Change "regroup" phrases
3. See/Change game settings
4. Restore original settings
5. See/Print/Delete student results
6. Use printer support

Use arrows to move. Press Return.
Escape: Main Menu

SUGGESTIONS

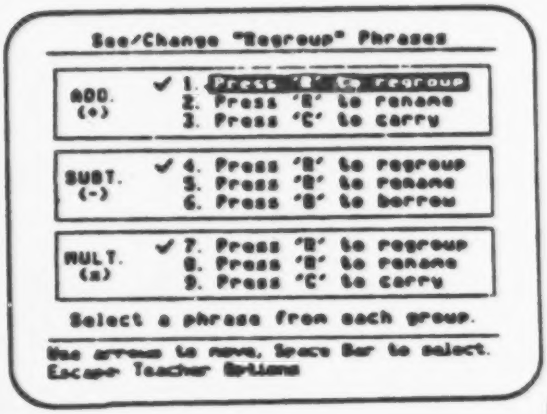
1. Leave the sound "on" if it does not distract other students. Sound is an important part of the game and the feedback lets the student know what is happening that he might not otherwise notice.

2. Modify the problem types and phrases to the ones that the student has had practice with.

3. a. Limit the amount of games to keep a student on task with the math problems.
   b. Review the games with the students prior to the learning activity. There is extensive reading involved in the directions and the games are challenging.

4. D.T.A. Applications
   Warm-up
   Independent Practice
   Guided Practice
   Vocabulary: Regroup, Borrow, Rename,

5. See the MECC manual for further information.



See/Change "Regroup" Phrases

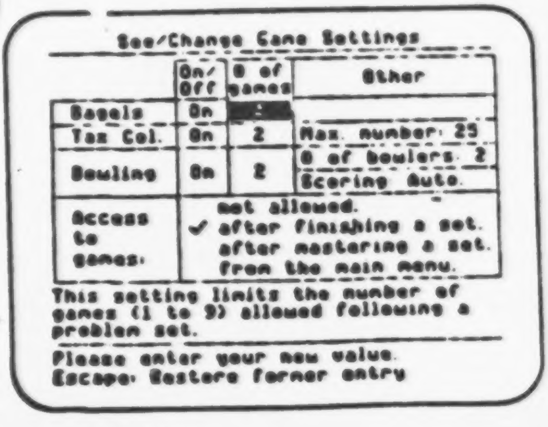
ADD. (+)
✓ 1. Press 'R' to regroup
2. Press 'R' to rename
3. Press 'C' to carry

SUBT. (-)
✓ 4. Press 'R' to regroup
5. Press 'R' to rename
6. Press 'B' to borrow

MULT. (x)
✓ 7. Press 'R' to regroup
8. Press 'R' to rename
9. Press 'C' to carry

Select a phrase from each group.

Use arrows to move, Space Bar to select.
Escape: Teacher Options

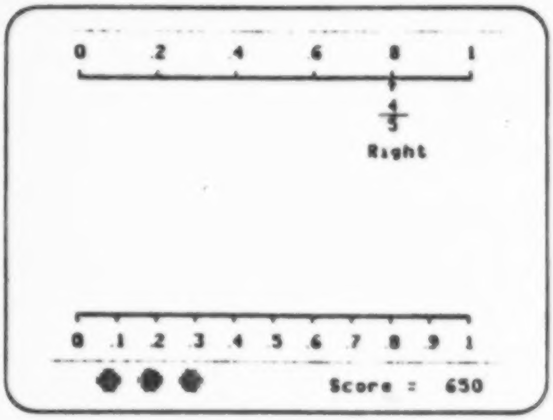


See/Change Game Settings

	On/ Off	# of games	Other
Bagels	On	[illegible]	
Tax Col.	On	2	Max. number: 25
Bowling	On	2	# of bowlers: 2 Scoring: Auto.
Access to games:	not allowed. ✓ after finishing a set. after mastering a set. from the main menu.		

This setting limits the number of games (1 to 9) allowed following a problem set.

Please enter your new value.
Escape: Restore former entry



SOFTWARE SUMMARY

Company: MECC A-206
Title: DECIMAL CONCEPTS
Activity: DECIMAL BOUNCE

OBJECTIVES:

MFMT: 3.1.2 Rename Fractions as Percents

P2 RENAME FRACTIONS AS PERCENTS *

*This activity does not correlate with the strategy given for this objective in the Domain Directory. However, it has been included because some teachers may wish to teach fractions and percents differently.

NOTE: Does not run on the Apple II+

ACTIVITY SUMMARY

DECIMAL BOUNCE is an educational game that provides students with practice in comparing decimal numbers and common fractions. The game is played by guiding numbers that bounce between two number lines. Points are scored for each number properly placed. The speed can be set before starting the game and can be adjusted after each round. Each round uses different number lines and presents a total of eight numbers. You are allowed to miss four times during a game. Each miss results in losing one of the balls located at the bottom of the screen. Depending on the situation, students guide the numbers to either the exact locations or the intervals on the number line that would contain the numbers. The first two rounds of DECIMAL BOUNCE rely heavily on the definition of decimal numbers and simple comparisons between decimal numbers. Succeeding rounds, however, include matching decimal numbers with corresponding common fractions. The fractions used are halves, fourths, fifths, eighths, tenths, and hundredths.

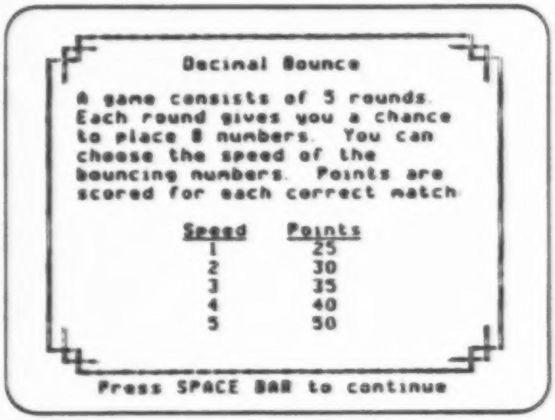
No records are kept for this game.

TEACHER OPTIONS

To access teacher management options, press CONTROL-A from the main menu. The only option available is to select the number of rounds per game between three and seven.

SUGGESTIONS

1. The teacher should preview this activity to check on the difficulty level and appropriateness of the activity for his/her students. More than one skill is practiced and students may not be able to deal with all of them.
2. Set the number of rounds in the teacher management options to three so that only the easiest problems are given. The easiest round is round 1 so students could stop after round 1 and press Esc twice to return to the main menu and repeat round 1.
2. D.T.A. Applications
    Warm-up
    Independent Practice
    Vocabulary: none
3. See MECC manual for further information.

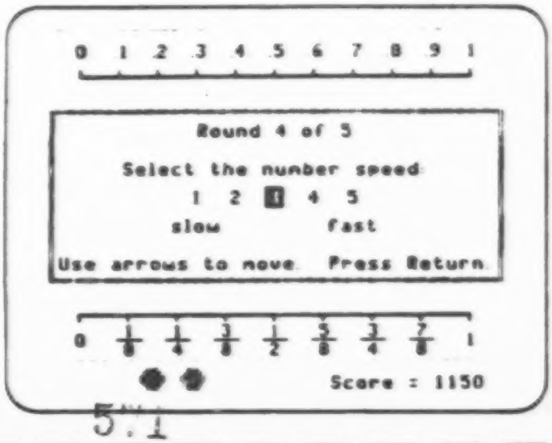


Decinal Bounce

A game consists of 5 rounds. Each round gives you a chance to place 8 numbers. You can choose the speed of the bouncing numbers. Points are scored for each correct match.

Speed	Points
1	25
2	30
3	35
4	40
5	50

Press SPACE BAR to continue



Round 4 of 5

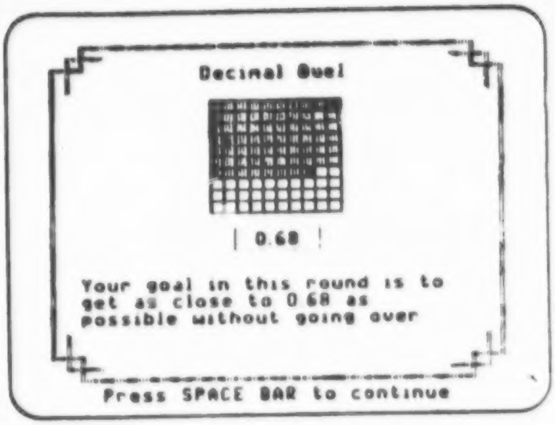
Select the number speed

1 2 3 4 5

slow fast

Use arrows to move. Press Return.

Score : 1150


Decimal Duel

| 0.68 |

Your goal in this round is to get as close to 0.68 as possible without going over

Press SPACE BAR to continue

SOFTWARE SUMMARY

Company: MECC A-206
Title: DECIMAL CONCEPTS
Activity: DECIMAL DUEL

OBJECTIVES:
MFMT 2.1.8 Add Decimals*

*This activity does not correlate directly with any of the skills listed under Add Decimals. However, it does acquaint students with the concept that decimals are parts of 100. Students could use decimal addition skills in playing the game.

NOTE: Does not run on the Apple II+

ACTIVITY SUMMARY

DECIMAL DUEL is an educational game that gives students an opportunity to visualize decimal numbers using the unit decimal square model. The game also gives practice in the mental addition of decimal numbers. The game can be played by a single student against the computer, or by two students playing against each other. The objective of the game is to get as close as possible to a target value without exceeding it. A game consists of three to seven rounds. Target numbers are random numbers in the range of 0.50 to 1.00. One round of each game has a target of 1.00. Players take turns selecting a number from the three values given (see the pictures). The number selected is then added to their square as they attempt to reach the target. The numbers displayed are usually in the range of 0.01 to 0.25. A larger value, however, may appear occasionally. If a player is unsatisfied with the choices available, the ? (Chance) may be selected. Three new numbers then appear, one of which must be selected. When a player has reached the target or gotten as close as he can without going over, he then selects DONE. Scores are kept for each round equal to the number of decimal places the player was able to fill in without going over the target. If he does go over the target, he loses all points from the round. If he matches the target exactly, he gets double points.

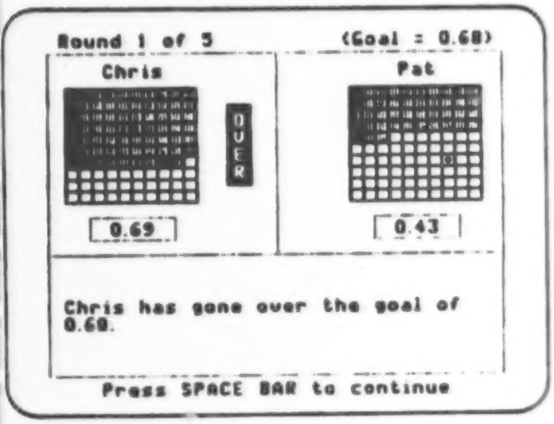
No records are kept for this game.

TEACHER OPTIONS

To access teacher management options, press CONTROL-A from the main menu. The only option available is to select the number of rounds per game between three and seven.

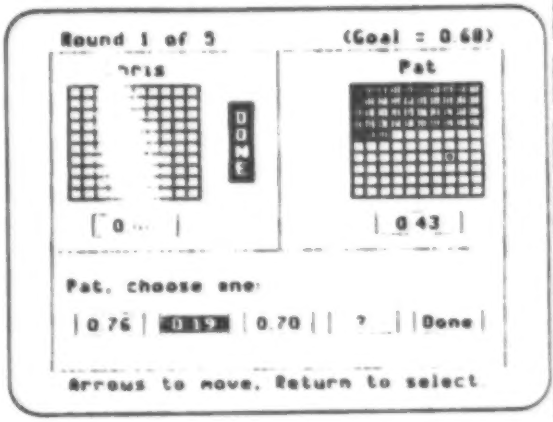
SUGGESTIONS

1. Students should be familiar with the use of a unit decimal square divided into 100 parts.
2. D.T.A. Applications
   - Warm-up
   - Independent Practice
   - Vocabulary: outwit, opponent, target, duel
3. See MECC manual for further information.


Round 1 of 5
(Goal = 0.68)
Chris
Pat
OVER
0.69
0.43

Chris has gone over the goal of 0.68.

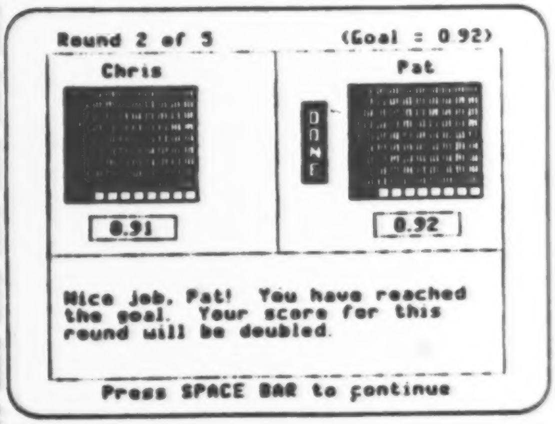
Press SPACE BAR to continue


Round 1 of 5
(Goal = 0.68)
hris
Pat
DONE
0
0.43

Pat, choose one:

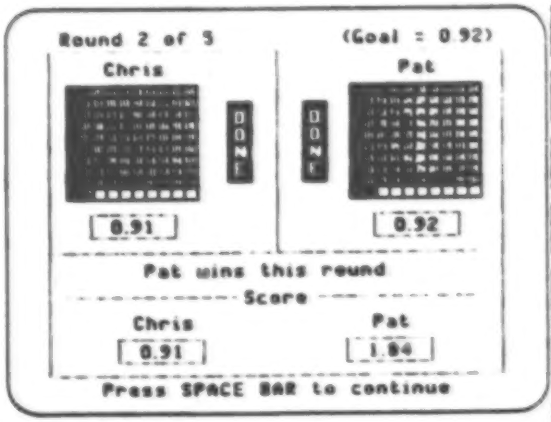
0.76
0.19
0.70
?
Done

Arrows to move, Return to select


Round 2 of 5
(Goal = 0.92)
Chris
Pat
DONE
0.91
0.92

Nice job, Pat! You have reached the goal. Your score for this round will be doubled.

Press SPACE BAR to continue

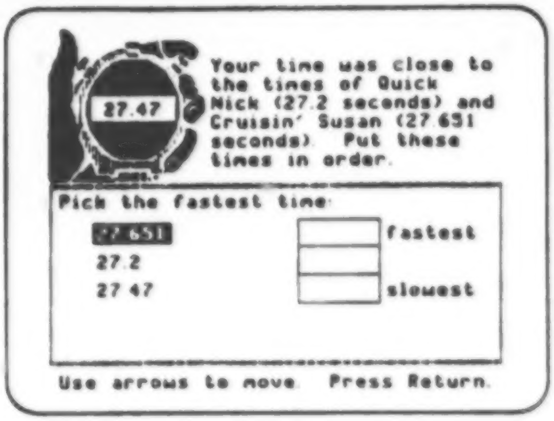

Round 2 of 5
(Goal = 0.92)
Chris
Pat
DONE
DONE
0.91
0.92

Pat wins this round

Score

Chris	Pat
0.91	1.84

Press SPACE BAR to continue



27.47

Your time was close to the times of Quick Nick (27.2 seconds) and Cruisin' Susan (27.651 seconds). Put these times in order.

Pick the fastest time:

27.651
27.2
27.47

SOFTWARE SUMMARY

Company: MECC A-206
Title: DECIMAL CONCEPTS
Activity: MAZE RUNNER

OBJECTIVES:

MFMT	3.1.1	Write Numbers in Words and Digits
	4.1.1	Choose a Reasonable Answer for a Mathematical Problem
	3.3.1	Order Decimals
SKILLS:	N1	IDENTIFY PLACE VALUE
	N2	IDENTIFY WORD NAMES FOR ONE THROUGH NINETEEN
	N4	IDENTIFY WORD NAMES FOR 20, 30, 40...90
	N6	IDENTIFY HYPHENATED NUMBER WORDS FROM TWENTY-ONE THROUGH NINETY-NINE
	N8	IDENTIFY THE WORD NAMES FOR HUNDRED AND THOUSAND
	N10	IDENTIFY THE WORD NAMES TENTHS AND HUNDREDTHS FROM THE DIGITS (.1 AND .01)
	N12	RECOGNIZE THAT "AND" REPRESENTS THE DECIMAL POINT
	RA1	ROUND OFF NUMBERS
	OD2	IDENTIFY THE SMALLEST IN A GROUP OF NUMBERS

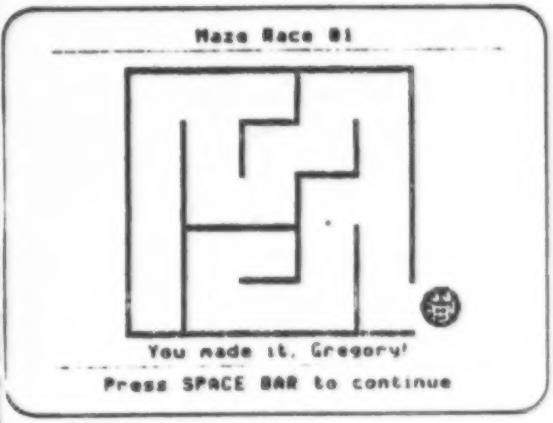
NOTE: Does not run on the Apple II+

ACTIVITY SUMMARY

Students work their way through an invisible maze. The walls of the maze are displayed only after they have been bumped into. After students reach the exit, the entire maze is revealed. If the student fails to reach the exit before time runs out, the question set that follows will pertain only to the distance traveled. Three questions are asked after each maze from a total of five possible questions.

Type 1: Given the time as a decimal number, choose the correct written form of the number. (Meets Skills N1, N2, N4, N6, N8, N10, N12)

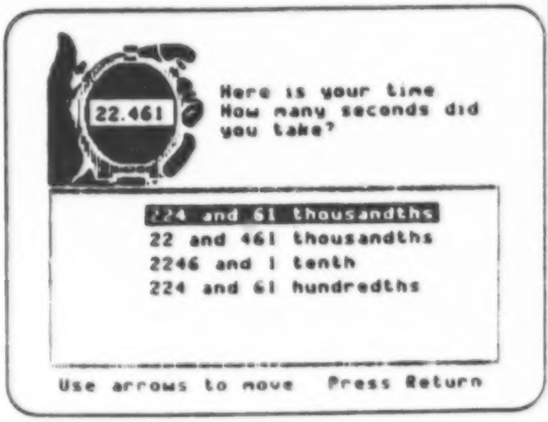
Example:



Maze Race #1

You made it, Gregory!

Press SPACE BAR to continue



22.461

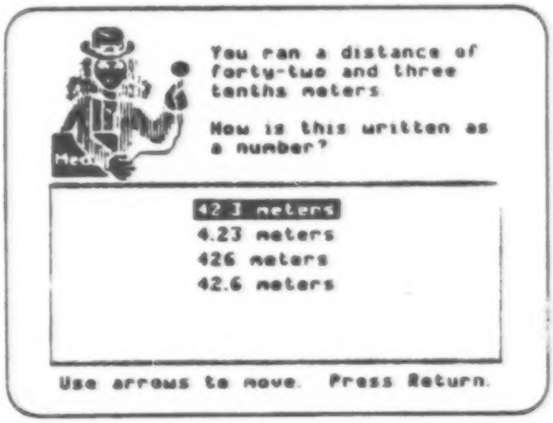
Here is your time
How many seconds did
you take?

224 and 61 thousandths
22 and 461 thousandths
2246 and 1 tenth
224 and 61 hundredths

Use arrows to move Press Return

Feedback: "Wrong. Please try again." The incorrect answer is then muted. This continues until there is only one choice left, the correct answer. Correct answer feedback: "That's right, (student name)!"

Type 2: Given the distance run in written form, choose the correct decimal number. (Meets Skills N1, N2, N4, N6, N8, N10, N12)



You ran a distance of
forty-two and three
tenths meters.

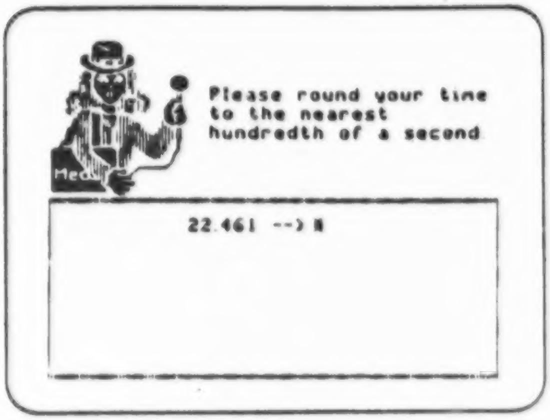
How is this written as
a number?

42 3 meters
4.23 meters
426 meters
42.6 meters

Use arrows to move. Press Return.

Feedback is the same as for Type 1.

Type 3: Given either the time or distance, round it to the place value asked for. (Meets Skill RA1)

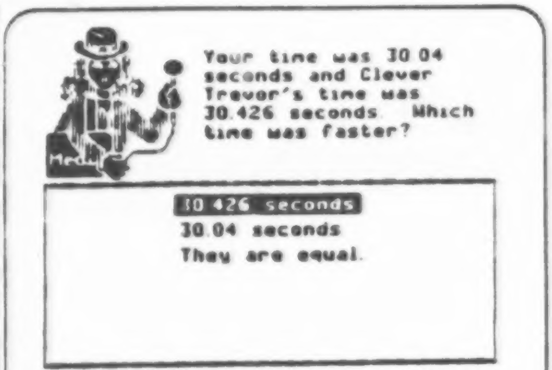


Please round your time to the nearest hundredth of a second

22.461 --> ▮

Wrong answer feedback: "Wrong. Please try again." for first mistake. For second mistake, "Wrong. Here is some help." Then a number line is given so that students can visually see which number is closest for rounding off a given number. If they still get it wrong, the activity asks, "Is it closer to 52.7 or 52.8?" If they still get it wrong by typing another number, the correct answer is given.
Correct answer feedback: "That's right, (student name)."

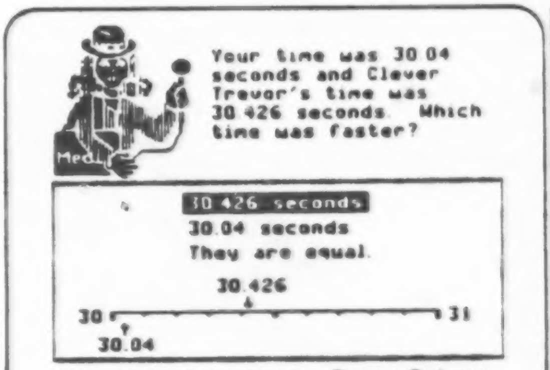
Type 4: Given two decimal numbers, choose the smaller one. (Meets skill OD2)



Your time was 30.04 seconds and Clever Trevor's time was 30.426 seconds. Which time was faster?

30.426 seconds
30.04 seconds
They are equal.

Use arrows to move. Press Return.



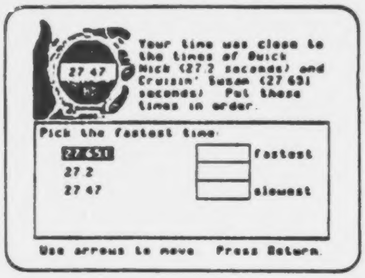
Your time was 30.04 seconds and Clever Trevor's time was 30.426 seconds. Which time was faster?

30.426 seconds
30.04 seconds
They are equal.

Use arrows to move. Press Return.

Wrong answer feedback: "Wrong. Please try again." for first mistake. For the second mistake, a number line is presented so that students can visually see which number is greater or smaller. If they still get it wrong, the correct answer is given.
Correct answer feedback: "That's right, (student name)."

Type 5: Given three decimal numbers, arrange them from smallest to largest. (Meets skill OD2)



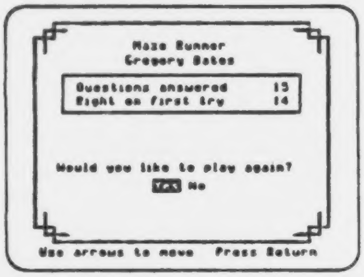
Your time was close to the times of Quick Nick (27.2 seconds) and Cruisin' Susan (27.63) seconds) Put these times in order.

Pick the fastest time:

27.65

27.2

27.47



Maze Runner
Gregory Bates

Questions answered 15
Right on first try 14

Would you like to play again?
Yes No

Wrong answer feedback: The student is given the correct answer.
Correct answer feedback: "That's right, Mary!"

At the end of the activity, students are given the number of questions answered and the number right on the first try.

TEACHER OPTIONS

To access teacher management options, press CONTROL-A from the main menu.
MAZE RUNNER can be modified in the following three ways:

1. The time limit can be set within the range of 40 to 90 seconds.
2. The total number of mazes presented may be set between three and seven.
3. The use of thousandths can be disallowed.

Up to 75 student sessions can be stored on the disk. Once the file is full, the oldest sessions will be deleted each time a new score is saved. The results indicate the number of questions answered correctly on the first try. Student scores can also be printed.

SUGGESTIONS

1. Students who get excited and continually press the arrow keys may find that the "MAN" in the maze does not move. It is better to press the arrow key once and wait for the action to be completed before pressing it again.
2. Students who have difficulty with directionality may have difficulty with the maze.
3. Thousandths are not dealt with on the MFMT objectives listed for this program so it is best to turn them off in the teacher management options.
4. D.T.A. Applications
    Warm-up
    Independent Practice
    Vocabulary: invisible, maze, meter, round (off)
5. See the MECC manual for further information.

577

SOFTWARE SUMMARY

Company: MECC A-124
Title: ESTIMATION
Activity: NUMBER LINE

OBJECTIVES:

MFMT: 2.1.1 READ SCALES ON MEASUREMENT INSTRUMENTS

SKILLS: MM2 IDENTIFY THE APPROPRIATE UNITS OF MEASURE
MM3 ESTIMATE TO THE NEAREST WHOLE UNIT OF MEASURE

ACTIVITY SUMMARY

NUMBER LINE provides students with practice with computing intervals between labelled units on a scale and estimating where an unmarked unit would be placed. It randomly generates a number. The student tries to position this number correctly on a number line using the left and right arrow keys. The 1, 2, and 3 keys may be used to vary the distance the pointer moves each time the arrow keys are pressed. When the arrow is in the right position, the student presses Return. If the student is correct, the computer indicates so in writing. If the answer is wrong, the correct placement will be shown.

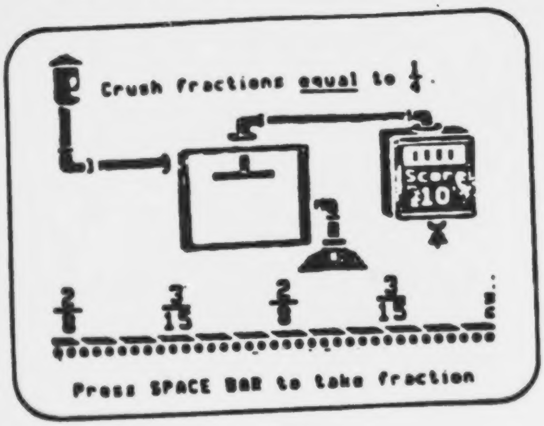
There is no sound to the program. No instructions, examples, or practicesare given. There is a tolerance for acceptable answers, but there is no explanation of how it is decided or what it is in terms of a value. Students are given 10 problems to answer. After completing the 10, they are given the option of repeating the activity again with 10 different problems or returning to the menu. The activity can be done using either a whole number scale with a range of 0-9000, marked in intervals of 20, or a decimal number scale with a range of 0.00-9.00 marked in intervals of .25.

TEACHER OPTIONS

There are no teacher management options other than the choice of whole or decimal intervals on the scale. The whole number interval scale is more applicable to the MFMT.

SUGGESTIONS

1. The whole number interval selection should be used to correspond to the MFMT.
2. Encourage students to try to increase speed as they estimate as well as to increase accuracy.
3. Explain to students what a tolerance range is and how it affects the closeness of their answers.
4. Have students keep track of how many they answer correctly on each set of 10 questions.
5. D.T.A. Applications:
    - Warm-up
    - Independent Practice
    - Vocabulary: interval
      tolerance
6. See the MECC manual for further information.


Crush fractions equal to 1/4.
Score
10
2/8
3/15
2/8
3/15
Press SPACE BAR to take fraction

SOFTWARE SUMMARY

Company: MECC A-202
Title: FRACTION CONCEPTS
Activity: CRUSHER/EQUAL
FRACTIONS

OBJECTIVES:

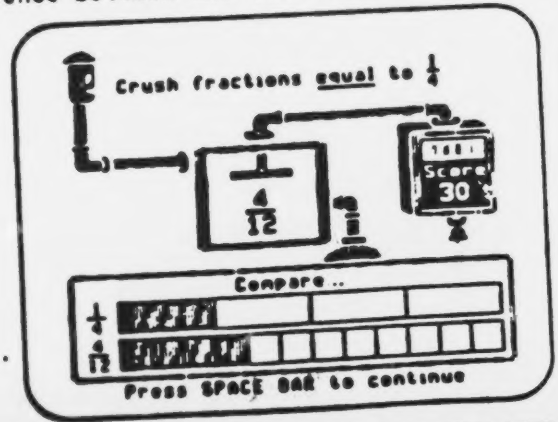
MFMT 2.1.5 Add Mixed Numbers
MFMT 2.1.6 Subtract Mixed Numbers

SKILL: A1 FIND A COMMON DENOMINATOR OR LOWEST COMMON DENOMINATOR
SKILL: A2 RENAME FRACTIONS TO A GIVEN DENOMINATOR

NOTE: DOES NOT RUN ON APPLE II+

ACTIVITY SUMMARY

Fractions move along a conveyer belt into place. The cue "Crush fractions equal to ___" is given at the top of the screen with a fraction. The student must press the Space Bar to send the equal fraction into the funnel for crushing. The game format provides a sound stimulus and increase in score for a correct response. With the timer turned off. the student is given two trials to make an incorrect response. "Compare..." appears and the student is given a bar graph to view the difference between the two fractions.

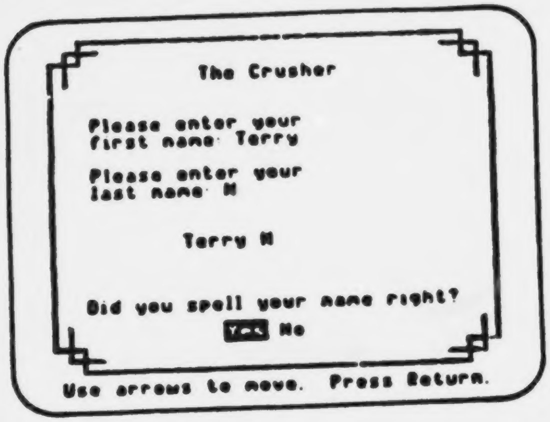

Crush fractions equal to 1/4
Score
30
4/12
Compare...
1/4
4/12
Press SPACE BAR to continue

TEACHER OPTIONS

1. Press Control-A from the main menu to access the teacher management options.
   A. Student menu selections can be simplified if other selections are turned off.
   B. The number of fractions in an activity can be controlled from 20 to 60 (must be multiples of 10).
   C. "Student Results" gives student names, activity #, number of fractions and score achieved with possible score. Results can be printed.
2. The speed of the conveyor belt can be adjusted to slow, normal or fast.
3. Press Control-S to turn the sound on or off at any time in the program.

SUGGESTIONS

1. Keep the Caps Lock key down so the student types his name in capital letters.
2. Have the student type his first name and last initial to save time.
3. Listen for sound to hear if the student is progresssing and getting correct answers.
4. D.T.A. Applications:
   Warm-Up
   Independent Practice
   Vocabulary: equal, compare
5. See MECC manual for further information.



The Crusher

Please enter your
first name: Terry

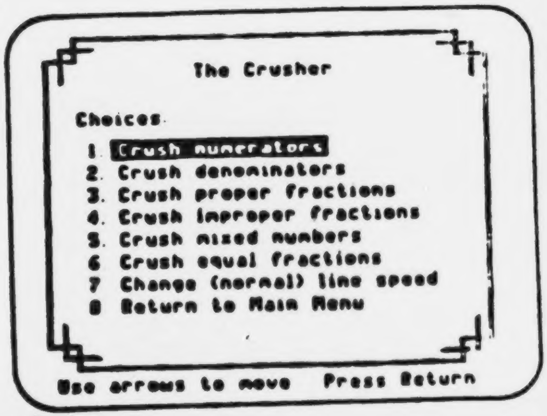
Please enter your
last name: M

Terry M

Did you spell your name right?

Yes No

Use arrows to move. Press Return.

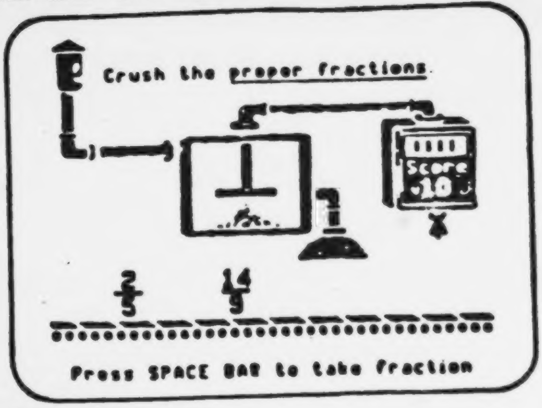


The Crusher

Choices:

1. Crush numerators
2. Crush denominators
3. Crush proper fractions
4. Crush improper fractions
5. Crush mixed numbers
6. Crush equal fractions
7. Change (normal) line speed
8. Return to Main Menu

Use arrows to move Press Return



Crush the proper fractions.

Press SPACE BAR to take fraction

SOFTWARE SUMMARY

Company: MECC A-202
Title: FRACTION CONCEPTS
Activity: CRUSHER/
PROPER FRACTIONS
IMPROPER FRACTIONS
MIXED NUMBERS

OBJECTIVES:

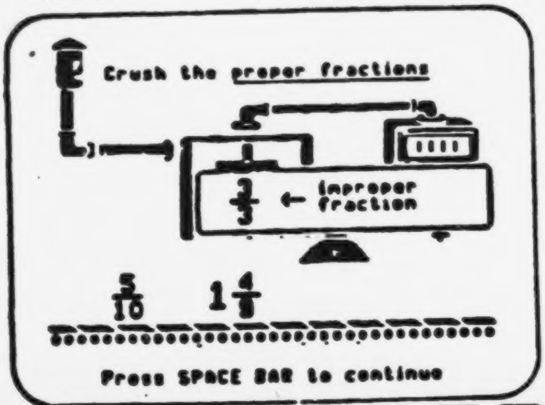
MFMT 2.1.7 Multiply a Whole Number by a Fraction
SKILL: C1 RECOGNIZE PROPER AND IMPROPER AND MIXED NUMBERS

NOTE: DOES NOT RUN ON APPLE II+

ACTIVITY SUMMARY

Fractions and whole numbers move along a conveyor belt at a selected pace. The cue is given at the top of the screen "Crush the proper fractions." The student must press the Space Bar when he recognizes a proper fraction under the game's funnel. The fraction is then crushed. When a student has a correct response, a sound is heard and the score increases. When the student makes an incorrect response, the correct name for the fraction or the whole number appears.

Ex.	$\frac{7}{8}$	proper fraction	$\frac{8}{7}$	improper fraction
	5	whole number	$5\frac{1}{2}$	mixed number



Crush the proper fractions

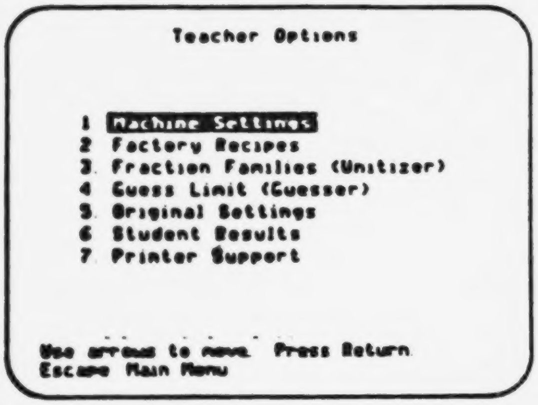
Press SPACE BAR to continue

TEACHER OPTIONS

1. Press Control-A from the main menu to access the teacher management options.
   - A. Student menu selections can be simplified if other selections are turned off.
   - B. The number of fractions in an activity can be controlled from 20 to 60 (must be multiples of 10).
   - C. "Student results" gives student names, activity #, number or fractions and score achieved with possible score. Results can be printed.
2. The speed of the conveyor belt can be adjusted to slow, normal or fast.
3. Press Control-S to turn the sound on or off at any time during the program.

SUGGESTIONS

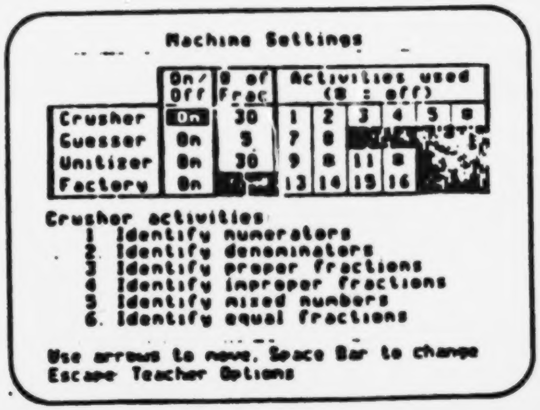
1. Keep the Caps Lock key down so that the student types his name in capital letters.
2. Have the student type his first name and last initial to save time.
3. If it does not disturb the other students, keep the sound on so that you can listen to how the student is progressing.
4. D.T.A. applications:
   Warm-up
   Independent Practice
   Vocabulary: improper fraction, proper fraction, whole number, mixed number
5. See MECC manual for further information.



Teacher Options

1 Machine Settings
2 Factory Recipes
3 Fraction Families (Unitizer)
4 Guess Limit (Guesser)
5 Original Settings
6 Student Results
7 Printer Support

Use arrows to move. Press Return
Escape Main Menu

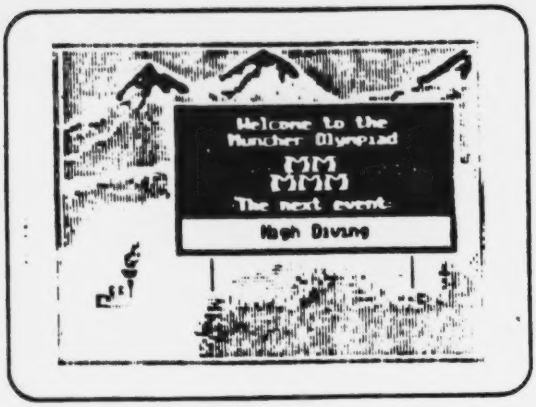


Machine Settings

	On/ Off	# of Frac	Activities used (0 : off)					
Crusher	On	30	1	2	3	4	5	0
Guesser	On	5	7	8	[illegible]	[illegible]	[illegible]	[illegible]
Unitizer	On	30	9	0	11	0	[illegible]	[illegible]
Factory	On	[illegible]	13	14	15	16	[illegible]	[illegible]

Crusher activities
1 Identify numerators
2 Identify denominators
3 Identify proper fractions
4 Identify improper fractions
5 Identify mixed numbers
6. Identify equal fractions

Use arrows to move, Space Bar to change
Escape Teacher Options



Welcome to the Muncher Olympiad

MM
MMM

The next event:

High Diving

SOFTWARE SUMMARY

Company: MECC A-196
Title: FRACTION MUNCHERS
Activity: EQUAL FRACTIONS

OBJECTIVES:

MFMT 2.1.5 Add Mixed Numbers
MFMT 2.1.6 Subtract Mixed Numbers
SKILL: R2 REDUCE FRACTIONS TO LOWEST TERMS

NOTE: DOES NOT RUN ON APPLE II+

ACTIVITY SUMMARY

The game is similar to Pac Man. Given a reduced fraction, the student must maneuver the muncher using all four arrow keys (or a joystick if one is connected) in a 5X6 grid with 30 squares containing not reduced fractions. He must then press the Space Bar to "munch" the not reduced fraction that equals the given reduced fraction. As the student progresses, the games become more difficult. The student may press ? for time out. If he does, he loses points but may continue to play. An entirely new session must be started once all four "munchers" have been lost. A muncher can be lost either by having a troggle eat it or by getting a wrong answer. Wrong answer feedback is a negative sound and a statement telling the student what the reduced equivalent of the fraction is that he had "munched."

Ex. Sorry your answer is wrong.
3/18 = 1/6.
Press Space Bar to continue.

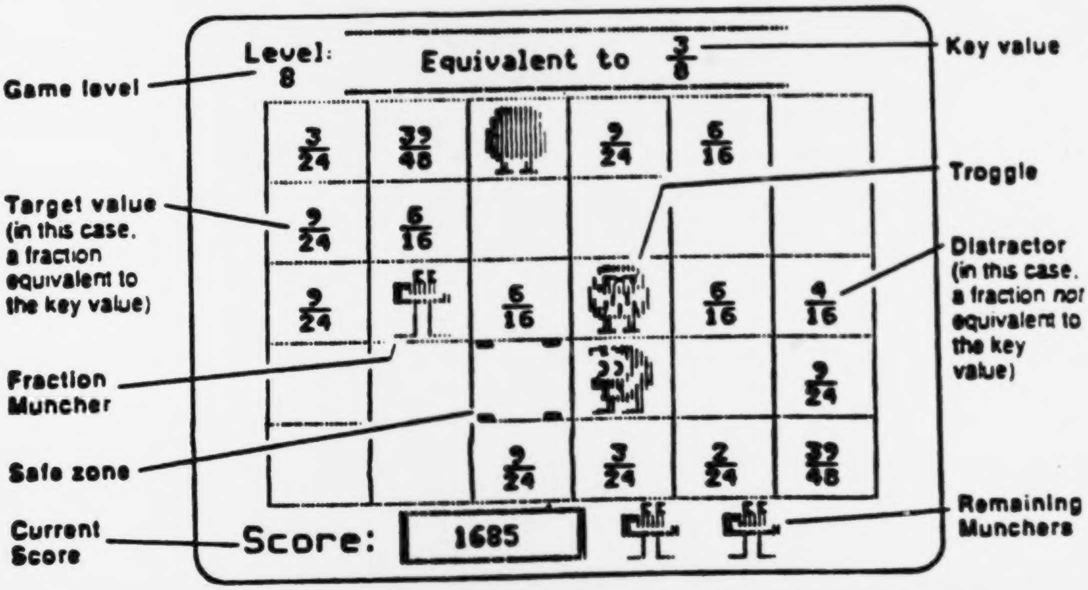
The score is shown at the bottom. Once a student successfully completes a few games, he is given a graphic of an Olympic game where the muncher is a winner and the troggle is a loser. He may also be put in the Muncher Hall of Fame if his score is among the 10 top scores for that activity.

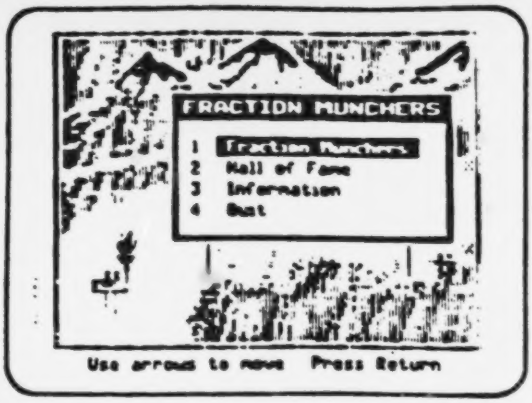
TEACHER OPTIONS

1. Press Control-A from the main menu to access the teacher management options.
   - A. The teacher could turn all the other activities "Off" except Equal Fractions.
   - B. Denominators can be modified from numbers 2 through 10, 12, and 16; however, at least four numbers must be chosen.
   - C. Game settings may be restored to their original settings and the Hall of Fame erased.
2. Press Control-S to turn the sound on or off at any point in the program.

SUGGESTIONS

1. Leave the sound on if it does not distract other students. Sound is an important part of the game and the feedback and lets the student know what is happening that he might not otherwise notice.
2. Listen for sound to hear if the student is progressing and getting correct answers.
3. If the student has difficulty getting the right answers, use the ? for Time Out. Let the student figure out all the right answers on paper and then go back to the game.
4. D.T.A. Applications:
   Warm-up
   Independent Practice
   Vocabulary: equal fractions, equivalent to
5. See the MECC manual for further information.


Level: 8
Equivalent to 3/8
Key value
Game level
3/24
33/48
9/24
6/16
Troggle
Target value (in this case, a fraction equivalent to the key value)
Distractor (in this case, a fraction *not* equivalent to the key value)
4/16
2/24
Fraction Muncher
Safe zone
Current Score
Score: 1685
Remaining Munchers



SOFTWARE SUMMARY

Company: MECC A-196
Title: FRACTION MUNCHERS
Activity: FRACTION
EXPRESSIONS

OBJECTIVES:

MFMT 2.1.5 Add Mixed Numbers
SKILLS: R2 REDUCE FRACTIONS TO LOWEST TERMS
A3 ADD FRACTIONS WITH LIKE DENOMINATORS

NOTE: DOES NOT RUN ON APPLE II+

ACTIVITY SUMMARY

The game is similar to Pac Man. Given a fraction, the student must maneuver the muncher using all four arrow keys (or a joystick if one is connected) in a 5X6 grid with 30 squares containing fraction expressions. He must then press the space bar to "munch" the expressions that equal the given fraction.

Ex. Equal to 1/2
Possible answers might be: 7/10 + 0; 1/4 + 1/4; 1/12 + 4/12; 1/2 + 0

As the student progresses, the game becomes more difficult. The student may press ? for time out. If he does, he has points taken away but may continue to play. An entirely new session must be started once all four munchers have been lost. A muncher can be lost either by having a troggle eat it or by getting a wrong answer. Wrong answer feedback is a negative sound and a statement telling the student what the reduced equivalent of the fraction is that he had "munched."

Ex. Sorry your answer is wrong.
1/4 + 2/4 = 3/4
Press Space Bar to continue.

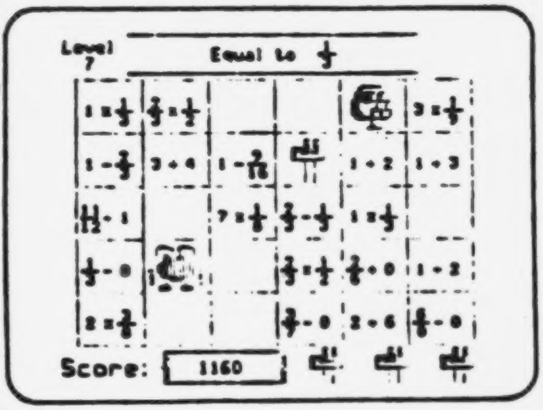
The score is shown at the bottom. Once a student successfully completes a few games, he is given a graphic of an Olympic game where the muncher is a winner and the troggle is a loser. He may also be put in the Muncher Mall of Fame if his score is among the 10 top scores for that activity.

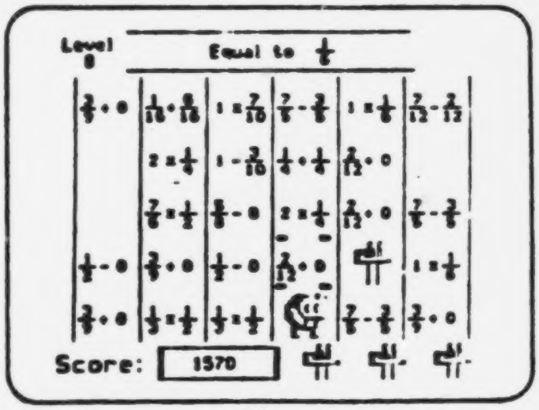
TEACHER OPTIONS

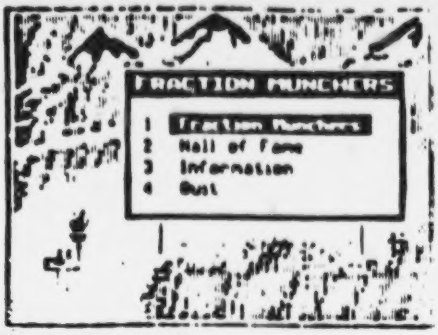
1. Press Control-S to turn the sound on or off.
2. Press Control-A from the main menu to access the teacher management options.
   - A. The teacher could turn all the other activities "Off" except FRACTION EXPRESSIONS. Within FRACTION EXPRESSIONS, the game must be further modified to work only with addition.
   - B. Denominators can be modified from numbers 2 through 10, 12 and 16; however, at least four numbers must be chosen.
   - C. Game settings may be restored to their original settings and the Hall of Fame erased.

SUGGESTIONS

1. Modify the game so that the student deals only with addition. (The subtraction and division parts of FRACTION MUNCHERS do not correlate with the problems on the MFMT.) If you are using the program as a review for Mixed Number/Fraction Operations, you could use the multiplication and addition parts together.
2. Leave the sound on if it does not distract other students. Sound is an important part of the game and the feedback and lets the student know what is happening that he might not otherwise notice.
3. Listen for sound to hear if the student is progressing and getting correct answers.
4. If the student is having difficulty knowing the right answers, use the ? for Time Out. Let the student figure out all the right answers on paper and then go back to the game.
5. D.T.A. Applications:
   Warm-up
   Independent Practice
   Vocabulary: equal to
6. See the MECC manual for further information.







SOFTWARE SUMMARY

Company: MECC A-196
Title: FRACTION MUNCHERS
Activity: FRACTION EXPRESSIONS

OBJECTIVES:

MFMT 2.1.7 Multiply a Whole Number by a Fraction
SKILLS: R2 REDUCE FRACTIONS TO LOWEST TERMS
M1 MULTIPLY A WHOLE NUMBER BY A FRACTION

NOTE: DOES NOT RUN ON APPLE II+

ACTIVITY SUMMARY

The game is similar to Pac Man. Given a fraction, the student must maneuver the muncher using all four arrow keys (or a joystick if one is connected) in a 5X6 grid with 30 squares containing fraction expressions. He must then press the space bar to "munch" the expressions that equal the given fraction.

Ex. Equal to 1/3
Possible answers might be: 1 X 1/3; 2 X 1/6; 1 X 9/10; 1/3 X 1/3

The answers sometimes involve multiplying a fraction by a fraction which is not an objective of the MFMT. "Equal to 1/10" had quite a few "fraction times a fraction" problems; however, the rest of the levels seem to have a majority of problems that deal with a fraction times a whole number.

As the student progresses, the game becomes more difficult. The student may press ? for time out. If he does, he has points taken away but may continue to play. An entirely new session must be started once all four munchers have been lost. A muncher can be lost either by having a troggle eat it or by getting a wrong answer. Wrong answer feedback is a negative sound and a statement telling the student what the reduced equivalent of the fraction is that he had "munched."

Ex. Sorry your answer is wrong.
1 X 2/4 = 1/2
Press Space Bar to continue.

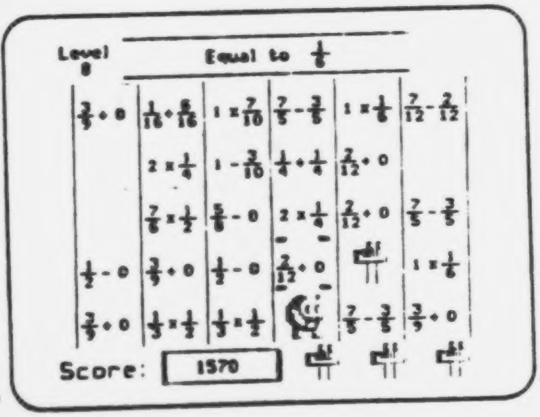
The score is shown at the bottom. Once a student successfully completes a few games, he is given a graphic of an Olympic game where the muncher is a winner and the troggle is a loser. He may also be put in the Muncher Hall of Fame if his score is among the 10 top scores for that activity.

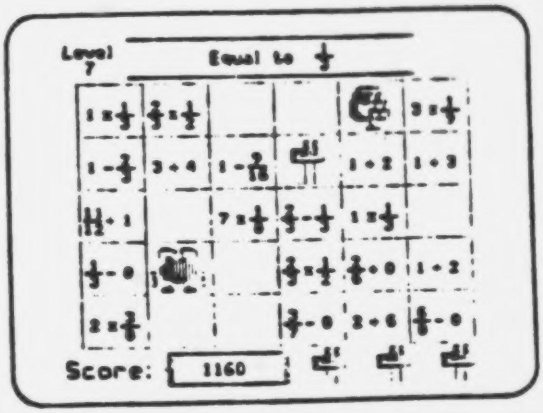
TEACHER OPTIONS

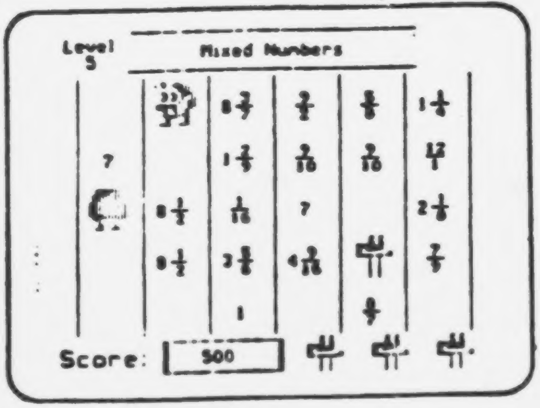
1. Press Control-S to turn the sound on or off.
2. Press Control-A from the main menu to access the teacher management options.
   - A. The teacher could turn all the other activities "Off" except FRACTION EXPRESSIONS. Within FRACTION EXPRESSIONS, the game must be further modified to work only with multiplication.
   - B. Denominators can be modified from numbers 2 through 10, 12 and 16; however, at least four numbers must be chosen.
   - C. Game settings may be restored to their original settings and the Hall of Fame erased.

SUGGESTIONS

1. Modify the game so that the student deals only with multiplication. (The subtraction and division parts of FRACTION MUNCHERS do not correlate with the problems on the MFMT.) If you are using the program as a review for Mixed Number/Fraction Operations, you could use the multiplication and addition parts together.
2. Leave the sound on if it does not distract other students. Sound is an important part of the game and the feedback and lets the student know what is happening that he might not otherwise notice.
3. Listen for sound to hear if the student is progressing and getting correct answers.
4. If the student is having difficulty knowing the right answers, use the ? for Time Out. Let the student figure out all the right answers on paper and then go back to the game.
5. D.T.A. Applications:
   Warm-up
   Independent Practice
   Vocabulary: equal to
6. See the MECC manual for further information.







SOFTWARE SUMMARY

Company: MECC A-196
Title: FRACTION MUNCHERS
Activity: FRACTION TYPES

OBJECTIVES:

MFMT 2.1.5 Add Mixed Numbers
SKILL: R1. RECOGNIZE REDUCED AND NOT REDUCED FRACTIONS

MFMT 2.1.7 Multiply a Whole Number by a Fraction
SKILL: C1 RECOGNIZE PROPER AND IMPROPER FRACTIONS AND MIXED NUMBERS

NOTE: DOES NOT RUN ON APPLE II+

ACTIVITY SUMMARY

Given a fraction type, the student must maneuver the muncher using all four arrow keys (or a joystick if one is connected) in a 5X6 grid with 30 squares containing different fraction types. He must then press the Space Bar to "munch" the fraction which represents the type indicated. As the student progresses, the game becomes more difficult. The student may press "?" to stop the game if he wishes. If he does, he has points taken away but may continue to play. An entirely new session must be started once all four munchers have been lost. A muncher can be lost either by having a troggle eat it or by getting a wrong answer. Wrong answer feedback is a negative sound and a statement telling the student what the fraction type was that he had "munched."

Ex. Sorry your answer is wrong.
5/8 is a proper fraction.
Press Space Bar to continue.

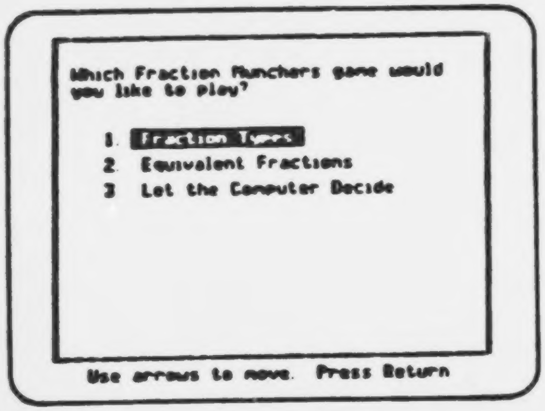
The score is shown at the bottom. Once a student successfully completes a few games, he is given a graphic of an Olympic game where the muncher is a winner and the troggle is a loser. He may also be put in the Muncher Hall of Fame if his score is among the 10 top scores for that activity.

TEACHER OPTIONS

1. Press Control-A from the main menu to access the teacher management options.
   A. The teacher could turn all the other activities "Off" except Fraction Types. Within Fraction Types, the game could further be modified to work with only four of the fraction types: Propers & Impropers, Mixed & Wholes, Given Numerator, Given Denominator, Reduced, Not Reduced. (Four types must be indicated.)
   B. Denominators can be modified from numbers 2 through 10, 12, and 16; however, at least four numbers must be chosen.
   C. Game settings may be restored to their original settings and the Hall of Fame erased.
2. Press Control-S to turn the sound on or off at any time in the program.

SUGGESTIONS

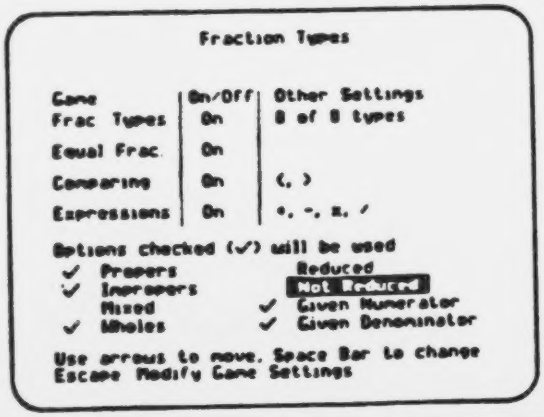
1. Leave the sound on if it does not distract other students. Sound is an important part of the game and the feedback and lets the student know what is happening that he might not otherwise notice.
2. Listen for sound to hear if the student is progressing and getting correct answers.
3. If the student has difficulty getting the right answers, use the ? for Time Out. Let the student figure out all the right answers on paper and then go back to the game.
4. D.T.A. Applications:
   Warm-up
   Independent Practice
   Vocabulary: proper, improper, mixed, whole, reduced, not reduced
5. See MECC manual for further information.



Which Fraction Munchers game would you like to play?

1. Fraction Types
2. Equivalent Fractions
3. Let the Computer Decide

Use arrows to move. Press Return



Fraction Types

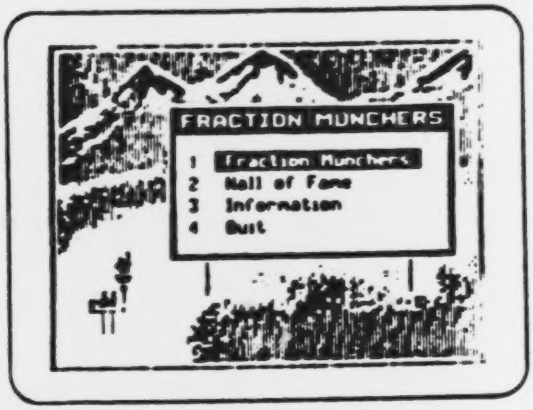
Game	On/Off	Other Settings
Frac Types	On	8 of 8 types
Equal Frac.	On	
Comparing	On	<, >
Expressions	On	+, -, x, /

Options checked (✓) will be used

✓ Propers
✓ Impropers
Mixed
✓ Wholes
Reduced
Not Reduced
✓ Given Numerator
✓ Given Denominator

Use arrows to move. Space Bar to change
Escape Modify Game Settings

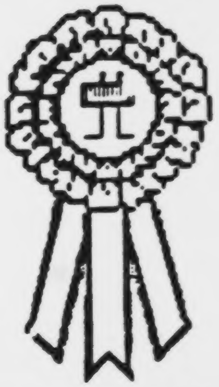
Fraction Munchers Award


FRACTION MUNCHERS
1 Fraction Munchers
2 Hall of Fame
3 Information
4 Quit

This award is to certify that

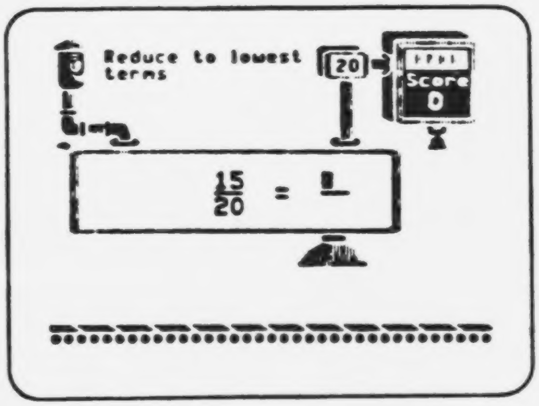
____

is an award-winning Fraction Muncher!



____

Teacher


Reduce to lowest terms

$\frac{15}{20} =$

SOFTWARE SUMMARY

Company: MECC A-203
Title: FRACTION PRACTICE UNLIMITED
Activity: CHANGER/REDUCE FRACTIONS

OBJECTIVES:

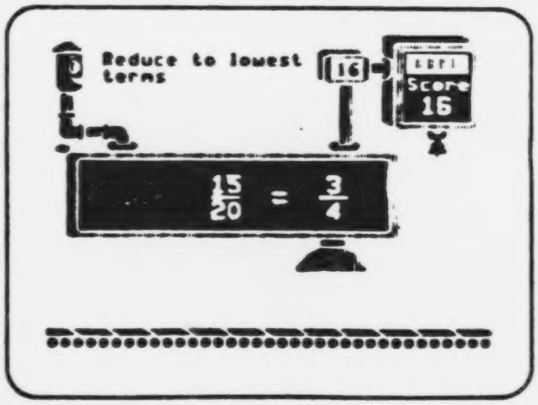
MFMT 2.1.5 Add Mixed Numbers
MFMT 2.1.6 Subtract Mixed Numbers

SKILL: R2 REDUCE FRACTIONS TO LOWEST TERMS

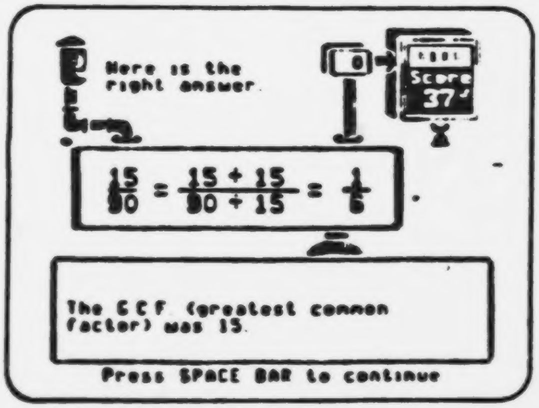
NOTE: DOES NOT WORK ON APPLE II+

ACTIVITY SUMMARY

Students are given a fraction that needs reducing. They are required to press the appropriate number keys and the Return key in order to perform the task. For a correct response, they receive a sound stimulus and an increase in score. With the timer turned off, they are given two chances to answer correctly. For an incorrect response, they receive a decrease in score and the correct answer with a strategy. The strategy given is to find the greatest common factor and divide the parts of the fraction by it. If they do not reduce the fraction to its lowest terms, they are given two more chances to do so.


Reduce to lowest terms

$\frac{15}{20} = \frac{3}{4}$


Here is the right answer.

$\frac{15}{90} = \frac{15 \div 15}{90 \div 15} = \frac{1}{6}$

The G C F (greatest common factor) was 15.

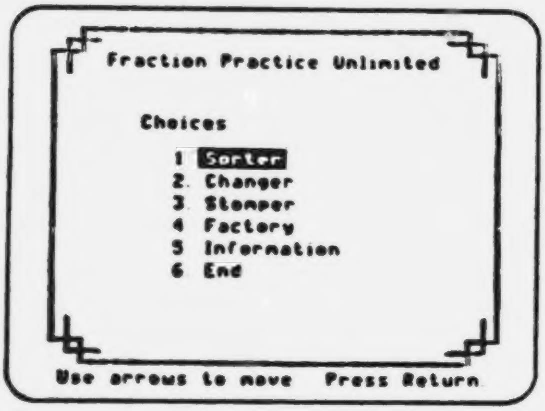
Press SPACE BAR to continue

TEACHER OPTIONS

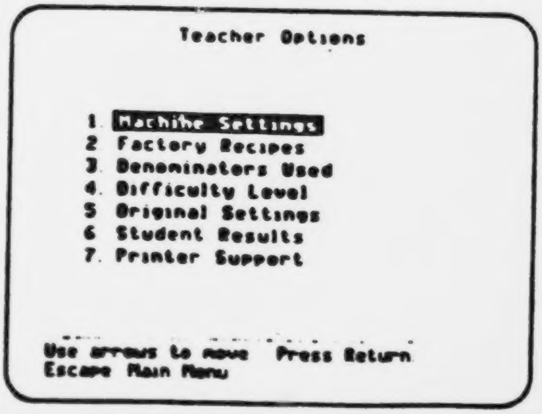
1. Press Control-A from the main menu to access the teacher management options.
   - A. Student menu selections can be simplified if other activities are turned "Off."
   - B. We recommend that the timer be turned off.
   - C. Denominators (the denominator the fraction reduces to) can be adjusted with increasing difficulty from 2 through 16.
2. Press Control-S to turn the sound on or off at any point in the program.

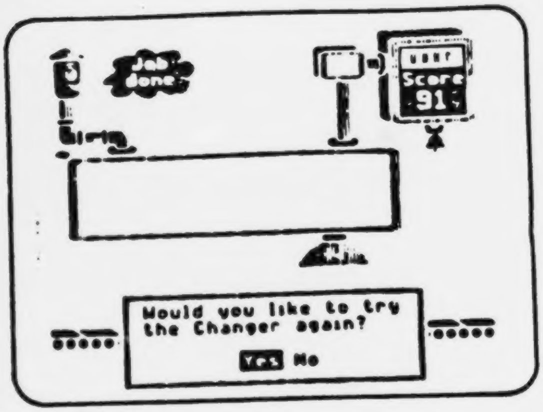
SUGGESTIONS

1. Keep the Caps Lock key down so the student types his name in capital letters.
2. Have the student type his first name and last initial to save time.
3. Listen for sound to hear if the student is progressing and getting correct answers.
4. D.T.A. Applications:
   Warm-up
   Guided Practice
   Independent Practice
   Vocabulary: reduce, lowest terms, G.C.F. (greatest common factor)
5. See MECC manual for further information.


Fraction Practice Unlimited
Choices
1 Sorter
2. Changer
3 Stomper
4 Factory
5 Information
6 End
Use arrows to move Press Return

Main Menu


Teacher Options
1. Machine Settings
2 Factory Recipes
3 Denominators Used
4. Difficulty Level
5 Original Settings
6 Student Results
7. Printer Support
Use arrows to move Press Return
Escape Main Menu



Would you like to try the Changer again?

SOFTWARE SUMMARY

Company: MECC A-203
Title: FRACTION PRACTICE UNLIMITED
Activity: CHANGER/RENAME FRACTIONS

OBJECTIVES:

MFMT 2.1.5 Add Mixed Numbers
MFMT 2.1.6 Subtract Mixed Numbers

SKILL: A2 RENAME FRACTIONS TO A GIVEN DENOMINATOR

NOTE: DOES NOT WORK ON APPLE II+

ACTIVITY SUMMARY

Fractions move along a conveyor belt and are funneled into position to be renamed. A denominator is given for the new fraction, and the student must enter a number for the numerator. The game format provides positive reinforcement with sound and an increase in score. With the timer turned off, the student is given two trials. For the first incorrect response, "wrong" appears and possible points decrease. With a second incorrect response, "wrong" appears and the solution is given.

Ex. $$\frac{2}{3} = \frac{2 \times 3}{3 \times 3} = \frac{6}{9}$$

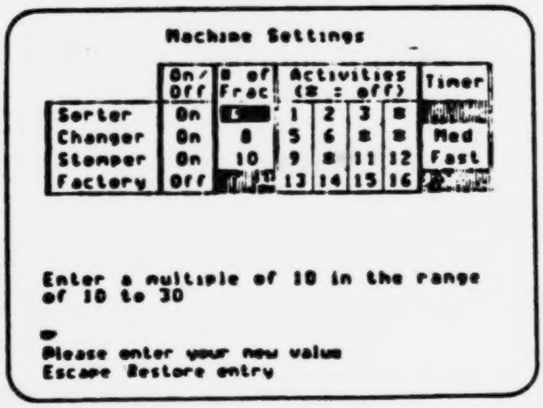
Multiplying the numerator by 3 gives you the right answer.

TEACHER OPTIONS

1. Press Control-A from the main menu to access the teacher management options.
   - A. Student menu selections can be simplified if other activities are turned "Off." Denominators (the denominator the fraction reduces to) can be selected with increasing difficulty from 2 through 16.
   - B. We recommend that the timer be turned "Off."
   - C. Difficulty Level can be adjusted for easy, medium, or hard.
   - D. "Student Results" gives student names, activity #, number of fractions and score achieved with possible score. Results can be printed.
2. Press Control-S to turn the sound on or off at any point in the program.

SUGGESTIONS

1. Keep the Caps Lock key down so the student types his name in capital letters.
2. Have student type his first name and last initial to save time.
3. Listen for sound to hear if the student is progressing and getting correct answers.
4. D.T.A. Applications:
   - Warm-up
   - Independent Practice
   - Vocabulary: reduce, lowest terms, G.C.F. (greatest common factor)
5. See MECC manual for further information.

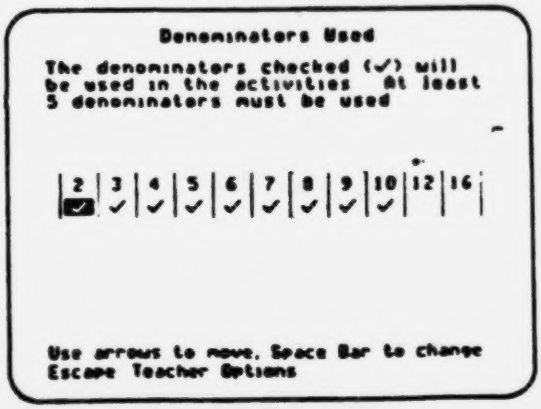


Machine Settings

	On/ Off	# of Frac	Activities (■ = off)				Timer
Sorter	On	6	1	2	3	■	[illegible]
Changer	On	8	5	6	■	■	Med
Stomper	On	10	9	■	11	12	Fast
Factory	Off	[illegible]	13	14	15	16	[illegible]

Enter a multiple of 10 in the range of 10 to 30

Please enter your new value
Escape Restore entry

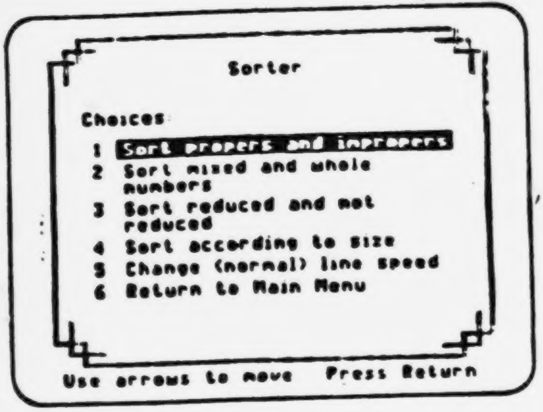


Denominators Used

The denominators checked (✓) will be used in the activities At least 5 denominators must be used

2	3	4	5	6	7	8	9	10	12	16
✓	✓	✓	✓	✓	✓	✓	✓	✓		

Use arrows to move, Space Bar to change
Escape Teacher Options



Sorter

Choices

1 Sort propers and impropers
2 Sort mixed and whole numbers
3 Sort reduced and not reduced
4 Sort according to size
5 Change (normal) line speed
6 Return to Main Menu

Use arrows to move Press Return

SOFTWARE SUMMARY

Company: MECC A-203
Title: FRACTION PRACTICE
UNLIMITED
Activity: SORTER/PROPER &
IMPROPER FRACTIONS

OBJECTIVES:

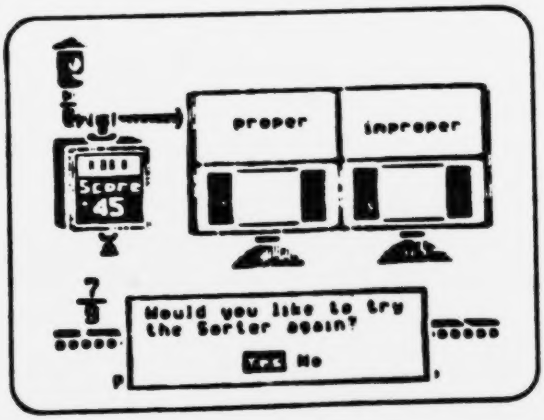
MFMT 2.1.7 Multiply a Whole Number by a Fraction
SKILL: R1 RECOGNIZE PROPER AND IMPROPER AND MIXED NUMBERS

NOTE: DOES NOT WORK ON APPLE II+

ACTIVITY SUMMARY

Proper and improper fractions move along a conveyor belt at a selected pace below two funnels. The student must recognize a fraction as proper or improper and press the Space Bar when it is under the correct funnel.

Game format provides a positive reinforcement with sound and an increase in score for a correct response and a short buzz and decrease in score for an incorrect response. If the student is at zero and continues to make incorrect responses, the score remains at zero and no noise is made.



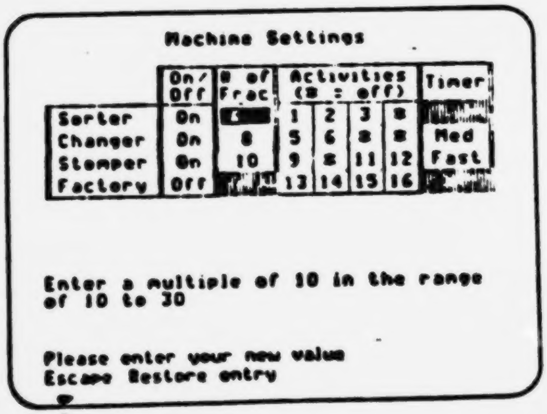
Would you like to try the Sorter again?

TEACHER OPTIONS

1. Press Control-A from the main menu to access the teacher management options.
   - A. Denominators to be used can be selected from numbers 2-16.
   - B. Student menu selections can be simplified if other activities are turned "Off."
   - C. "Student Results" gives student names, activity #, number of fractions and score achieved with possible score. Results can be printed.
2. The speed of the conveyor belt can be adjusted to slow, medium or fast just before the activity is selected.
3. Press Control-S to turn the sound on or off at any point in the program.

SUGGESTIONS

1. Leave the sound on if it does not distract other students. Sound is an important part of the game and the feedback: it lets the student know what is happening that he might not otherwise notice. It also alerts the teacher of the student's activity. The more sound that is heard often means the student is getting correct answers.
2. D.T.A Applications:
   - Warm-Up
   - Independent Practice
   - Vocabulary: sort, proper and improper
3. See MECC manual for further information.

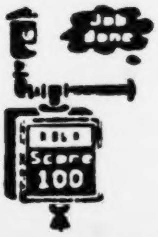


Machine Settings

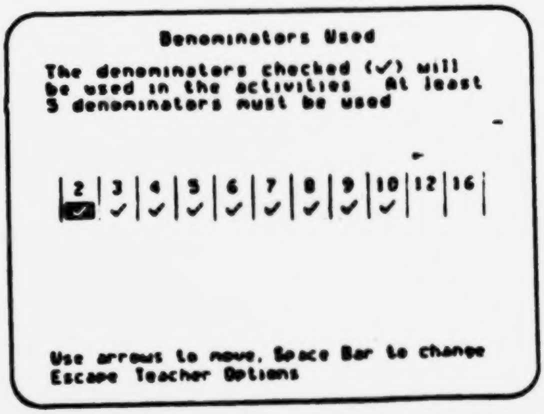
	On/Off	# of Frac	Activities (■ = off)				Timer
Sorter	On	6	1	2	3	■	[illegible]
Changer	On	8	5	6	■	■	Med
Stamper	On	10	9	■	11	12	Fast
Factory	Off	[illegible]	13	14	15	16	[illegible]

Enter a multiple of 10 in the range of 10 to 30

Please enter your new value
Escape Restore entry



Very good
a perfect score!

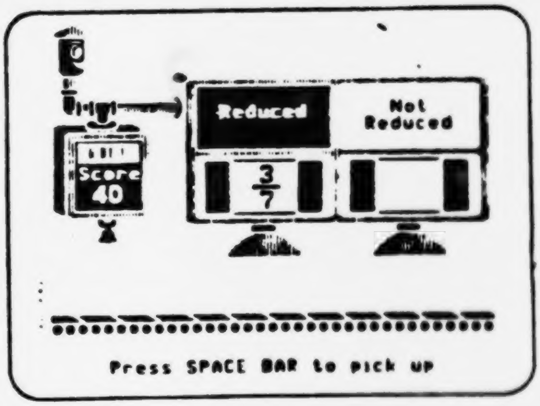


Denominators Used

The denominators checked (✓) will be used in the activities. At least 3 denominators must be used

2	3	4	5	6	7	8	9	10	12	16
✓	✓	✓	✓	✓	✓	✓	✓	✓		

Use arrows to move, Space Bar to change
Escape Teacher Options



Press SPACE BAR to pick up

SOFTWARE SUMMARY

Company: MECC A-203
Title: FRACTION PRACTICE UNLIMITED
Activity: SORTER/REDUCED NOT REDUCED

OBJECTIVES:

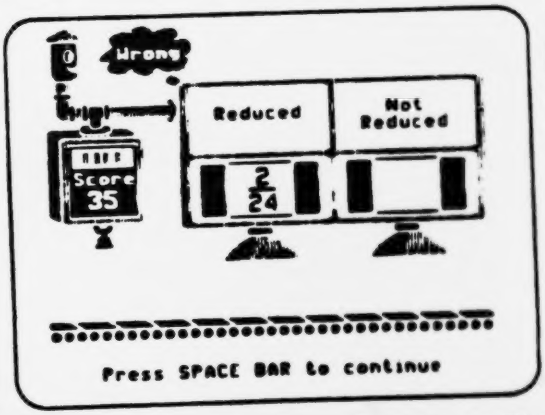
MFMT 2.1.5 Add Mixed Numbers
MFMT 2.1.6 Subtract Mixed Numbers
MFMT 2.1.7 Multiply a Whole Number by a Fraction

SKILL: R1 RECOGNIZE REDUCED AND NOT REDUCED FRACTIONS

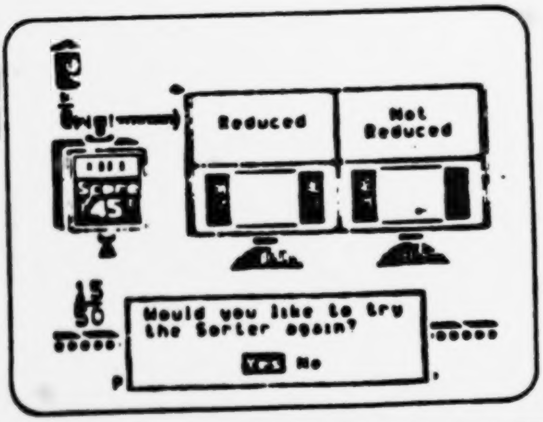
NOTE: DOES NOT WORK ON APPLE II+

ACTIVITY SUMMARY

Fractions move along a conveyer belt at a selected pace. Students must press the Space Bar when the correct fraction is under the "Reduced" funnel or the "Not Reduced" funnel. When a correct response is made, the student is rewarded with a sound stimulus and an increase in score. For an incorrect response, the student hears a short buzz, the word "wrong" appears, and he receives a decrease in score. No strategy is given to the student when this happens. There are 10 fractions given in each activity.



Press SPACE BAR to continue



Would you like to try the Sorter again?

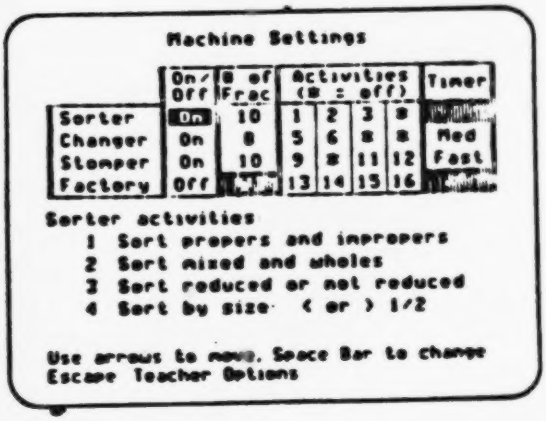
Yes No

TEACHER OPTIONS

1. Press Control-A from the main menu to access the teacher management options.
   A. Student menu selections can be simplified if other activities are turned "Off."
   B. "Student Results" gives student names, activity #, number of fractions and score with possible score. Results can be printed.
2. The speed of the conveyor belt can be adjusted to slow, medium or fast just before the activity is selected.
3. Press Control-S to turn the sound on or off at any point in the program.

SUGGESTIONS

1. Keep the Caps Lock key down so the student types his name in capital letters.
2. Have the student type his first name and last initial to save time.
3. Listen for sound to hear if the student is progressing and getting correct answers.
4. D.T.A. Applications:
   Warm-Up
   Independent Practice
   Vocabulary: sort, reduced
5. See MECC manual for further information.

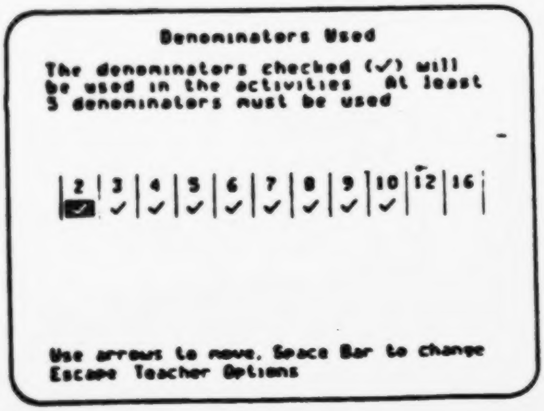


Machine Settings

	On/Off	# of Frac	Activities (# = off)				Timer
Sorter	On	10	1	2	3	#	[illegible]
Changer	On	8	5	6	#	#	Med
Stomper	On	10	9	#	11	12	Fast
Factory	Off	[illegible]	13	14	15	16	[illegible]

Sorter activities
1 Sort propers and impropers
2 Sort mixed and wholes
3 Sort reduced or not reduced
4 Sort by size < or > 1/2

Use arrows to move, Space Bar to change
Escape Teacher Options



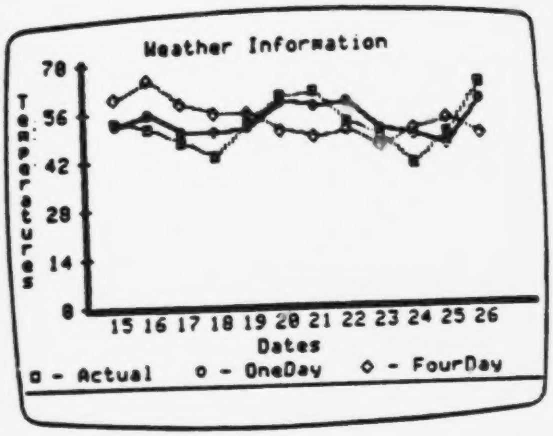
Denominators Used

The denominators checked (✓) will be used in the activities At least 5 denominators must be used

2	3	4	5	6	7	8	9	10	12	16
✓	✓	✓	✓	✓	✓	✓	✓	✓		

Use arrows to move, Space Bar to change
Escape Teacher Options

SOFTWARE SUMMARY



Company: Mecc A137
Title: Graph

Objective:
MFMT 2.3.2 Use Information from Graphs
Skill: UG1 Identify information on a circle graph
UG2 Identify information on a bar graph
UG3 Identify information on a line graph
UG4 Identify intervals on horizontal or vertical scales

Activity Summary

MECC Graph is a utility program than enables students to quickly graph data they have collected. This program eliminates the time consuming task of constructing a graph and enhances the time spent on organizing and analyzing information.

The program will utilize two types of data and produce four different style graphs. The graphs scales and ranges may be adjusted and the data may be displayed in several graph styles.

Because this is a utility program it is highly recommended that a teacher read the MECC manual before implementing the program. There is no accurate way to summarize this program without leaving out pertinent information.

SUGGESTIONS

1. Have the students collect data on subjects that are motivating and high interest to them.
   Ex. Fashion, food, cars, telephone use, movies...

2. Use this program with the entire class as a group activity initially, then with small groups until it is appropriate to use with each student individualy.

3. Having access to a printer will greatly enhance the effectivness of this activity.

mecc

mecc graph

from the series displaying information

instructional computing courseware
for the **apple®** II computer

the computing and information collection
Basic skills for the information age.

MECC ID: A-137 PGIN #: 7695-0028

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INTRODUCTION

MECC Graph is an easy-to-use, flexible graphing aid for students. It is designed to help students quickly graph data they have collected.

MECC Graph offers two programs based on the type of data the students have collected: name/number data and number pair data. Name/number data can be entered and displayed in each of three types of graphs: line, bar, or pie. Number pair data can only be displayed as a line graph.

With MECC Graph, students can change their data and adjust the scale of their graphs. Both programs allow up to three sets of data to be entered, stored, and displayed in the style of graph selected. Students can display the mean, median, and standard deviation of each set of data entered. Data-entry screens and graphs can be printed. The printed data-entry screens and graphs can then be analyzed and included in student reports.

MECC Graph is a companion to the MECC Graphing Primer package. MECC Graphing Primer is intended to reinforce a student's basic understanding of the concepts of graph construction and analysis.

MECC Graph operates on the Apple II series of computers. The use of two disk drives, a data diskette, and a printer will greatly enhance the effectiveness of these programs; however, they are not required equipment.

BACKGROUND INFORMATION

MECC Graph allows students to use the majority of their time and effort analyzing the data they collect and the graphs they produce. Students can spend a great deal of time with pencil and ruler constructing graphs. All too often these students spend all of their energy on graph construction and have little left for the important part—analyzing both the data and the graphs.

Because graphing can take so much of the student's time, teachers are often reluctant to assign various graphing tasks. But MECC Graph makes it possible for students to graph name/number data quickly and easily in three different graph styles, to manipulate the scales of line and bar graphs, and to print and analyze graphs.

MECC Graph is also a useful teacher utility. With these programs, teachers can quickly graph student-collected data in various graph styles and scales, and print and duplicate the graphs for discussion. Before MECC Graph, it would have been very time-consuming to prepare a class on the best way to display, manipulate, and analyze student-collected data.

Students can end a program at any point where the program is waiting for a response by pressing the Escape (Esc) Key twice.

The teacher can erase data the students have saved through a hidden teacher option. The hidden teacher option can be accessed from the main menu by pressing the Control Key and the A Key at the same time (Ctrl-A).

The Print Option

Students can print out the graphs and data-entry screens that they create. The option (P = print) will appear on the bottom of the graph and data-entry screens if the option is turned on. If that option does not appear, either the Print Option was not turned on or the printer is not properly connected.

Turn the Print Option on by selecting Option 4, "Printer Support," from the main menu. "Printer Support" allows you to:

1. identify the kind of printer and interface card you have connected to your computer;
2. select the printer slot number;
3. test your printer;
4. turn the Print Option on or off.

The graphs created with this package can be printed if you have one of the following combinations of printers and interface cards:

- Apple DMP with Parallel Card;
- Apple Imagewriter with Serial Card;
- a printer connected and supported through an Orange Micro Grappler Card.

The interface card must be in Slot 1 or 2. Refer to your printer manual for further instructions.

Saving Data

Up to five data-entry screens can be stored directly on the MECC Graph program diskette. Data-entry screens can be saved by selecting the Save Option (S = save). The Save Option is displayed below the data-entry screen.

Additional data can be stored by erasing unwanted data or by creating and using a data diskette. A data diskette can be created by selecting Option 5, "Diskette Support," from the main menu.

If you are electing to use a data diskette, it would be best to have two disk drives connected to your computer. To configure the program for a one- or two-drive system, select Option 5, "Diskette Support," from the main menu.

To use a two-drive system, place the program diskette in Drive 1 and the data diskette in Drive 2. To use a data diskette on a one-drive system, you must replace the program diskette with the data diskette before pressing the S Key to save the data. Reverse the process after the data has been stored on the diskette.

Data can be moved from the program diskette and stored on a data diskette by loading the desired data onto the data-entry screen and then saving it on a data diskette. You can clear a data-entry screen to enter a new set of data by returning to the main menu.

DESCRIPTION

MECC Graph is an easy-to-use, flexible graphing aid for students in any subject area in which students collect and graph data. The programs allow students to graph name/number and number pair data. Up to three sets of data can be entered and graphed. Name/number data can be graphed as a line, bar, or pie graph. Students can change the data they enter and adjust the scale of the graphs they produce. Data-entry screens and graphs can be printed.

Topic: Graphing

Type: Student Utility

Reading Level: 7 and Under (Flesch)

Grade Range: 7-9

Classroom Use: Individual or Large Group

LEARNING OBJECTIVES

After using these programs successfully, the student should be able to

- produce graphs based on both name/number and number pair data;
- graph name/number data as a line, bar, and pie graph;
- adjust the scales of the graphs produced;
- print both data-entry screens and graphs.

HOW TO RUN THE MECC GRAPH PROGRAMS

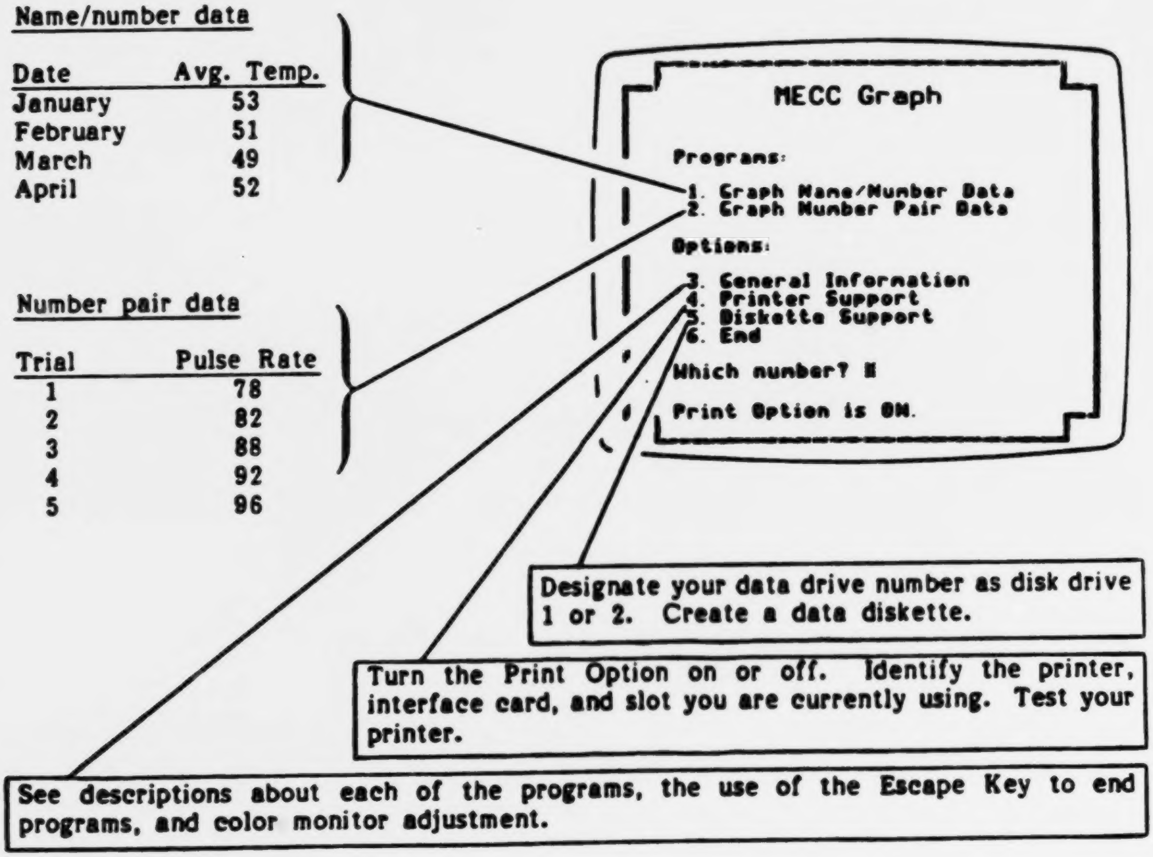
Making a graph with MECC Graph is as easy as typing the data you have collected into a data-entry screen and pressing the letter G. That's almost all there is to it. On the next couple of pages, you will find a quick reference guide to each of the MECC Graph options.

Before beginning, however, you will need to examine your data and decide whether it falls in the category of name/number data or number pair data. There is a separate data-entry screen for each type of data and separate options available.

Name/number data can be graphed as a line, bar, or pie graph.

Number pair data can only be graphed as a line graph.

Look at the following examples to help you decide which category your data falls into and then make that choice from the main menu.



Name/number data

Date	Avg. Temp.
January	53
February	51
March	49
April	52

Number pair data

Trial	Pulse Rate
1	78
2	82
3	88
4	92
5	96

```
MECC Graph

Programs:

1. Graph Name/Number Data
2. Graph Number Pair Data

Options:

3. General Information
4. Printer Support
5. Diskette Support
6. End

Which number? ■

Print Option is ON.
```

Designate your data drive number as disk drive 1 or 2. Create a data diskette.

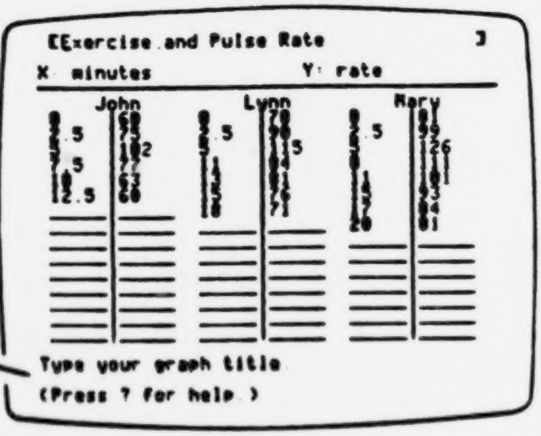
Turn the Print Option on or off. Identify the printer, interface card, and slot you are currently using. Test your printer.

See descriptions about each of the programs, the use of the Escape Key to end programs, and color monitor adjustment.

HOW TO RUN THE MECC GRAPH PROGRAMS (continued)

Depending on the type of data you have and the option you have chosen from the main menu, you will see one of the two data-entry screens shown below.

Type the titles of the graph and the x- and y-axes, as well as the labels for each set of data in response to the directions at the bottom of the data-entry screen.

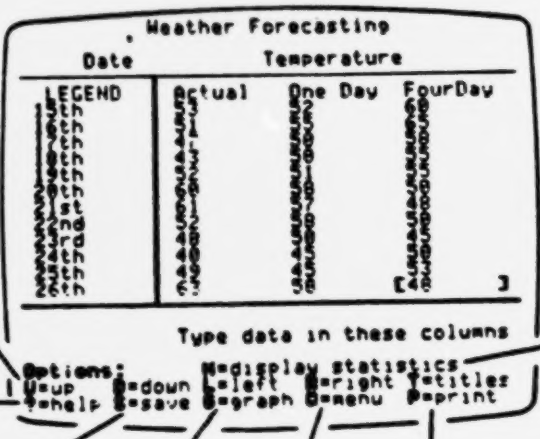


```
[Exercise and Pulse Rate                ]
X  minutes                 Y: rate
        John          Lynn          Mary

Type your graph title
(Press ? for help.)
```

While the cursor is in the data columns, you can use the options at the bottom of the screen by pressing the key shown for each option.

U, D, L, and R Keys move the cursor up, down, left, and right around the data-entry screen. The arrow keys will perform the same function. The T Key will move the cursor to the graph title at the top of the data-entry screen.



```
            Weather Forecasting
     Date              Temperature
   LEGEND    Actual    One Day   FourDay

              Type data in these columns
Options:          M=display statistics
U=up   D=down  L=left   R=right  T=titles
?=help S=save  G=graph  Q=menu   P=print
```

Press the M key to display the mean, median, and the standard deviation of each of the columns of numbers. Press the M Key again to clear the statistics from the screen.

Press the ? Key to receive help entering your data.

Press the S Key to save your data.

Press the G Key to graph the data you see on the data-entry screen.

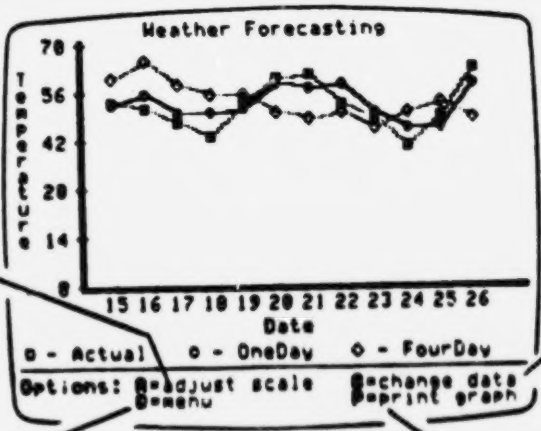
Press the Q Key to return to a menu giving you the choice of another type of graph.

Press the P Key to print the data-entry screen that you see above.

HOW TO RUN THE MECC GRAPH PROGRAMS (continued)

You have four options available to you when the graph of your data is displayed on the screen. Those options are displayed at the bottom of the screen.

Press the A Key to adjust the scale of the x- and y-axes.


Weather Forecasting
Temperature
70
56
42
28
14
0
15 16 17 18 19 20 21 22 23 24 25 26
Date
□ - Actual
○ - OneDay
◇ - FourDay
Options: A=adjust scale
Q=menu
C=change data
P=print graph

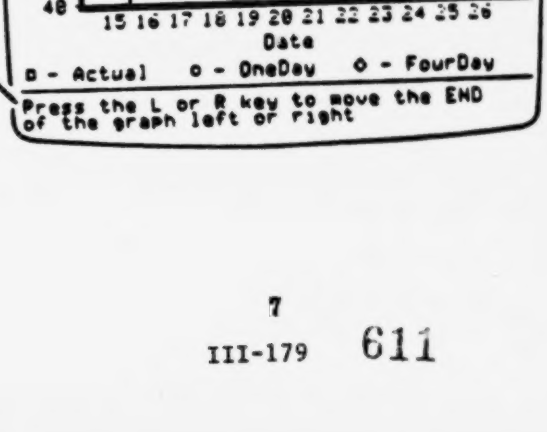
Press the C Key to return to the data-entry screen and change the data you entered there.

Press the Q Key to return to a menu giving you the option to graph this data in another style. (Your data will not be lost.)

Press the P Key to print a copy of the graph that you see.

In the Adjust Scale Option, you can change the minimum, maximum, and increment values on the y-axis in the GRAPH NAME/NUMBER DATA program and on both the x- and y-axes in the GRAPH NUMBER PAIR DATA program.

To change the axes values, follow the instructions at the bottom of the screen.


Temperature
70
5
40
15 16 17 18 19 20 21 22 23 24 25 26
Date
□ - Actual
○ - OneDay
◇ - FourDay

Press the L or R key to move the END of the graph left or right

Horizontal and vertical lines across the graph will show you what you will see on the new graph. If you are dissatisfied with the new graph, adjust the scale again. Graphs are not saved, only data. If you want a record of your new graph, print a paper copy.

HOW TO USE THE PROGRAMS IN THE CLASSROOM

This section of the manual will address two topics:

I - Some Ideas for Classroom Use

What are some ways in which the package can be used in the classroom setting?

II - Orientation Activities

What are some ways to get the students started and to help them become comfortable with each function of the programs?

I. Some Ideas for Classroom Use

Business education, science, social studies, and physical education are some curriculum areas in which students could gain a greater understanding of facts and processes if they were to gather and analyze data. In most subject areas there are many opportunities to gather numeric information, to analyze the data, and to draw conclusions from it.

Students often enjoy the chance to be actively involved in data-gathering activities. Teachers, however, are often reluctant to assign graphing tasks because students find the process of drawing the graphs arduous and time-consuming. And, if the students should draw their graphs incorrectly or use an inappropriate graph style, all of their efforts and classroom time are wasted.

Student Tasks

Have the students gather information on any aspect of your subject area that can be quantified. If possible, duplicate and distribute the data sheets (pages 9 and 10) for them to use as they record their data. Have them type the data into the MECC Graph data-entry screen, graph the data, and print the graph.

Because graphing with MECC Graph is so easy, have them produce line, bar, and pie graphs. Discuss the possible interpretation of the graphs. Discuss some possible conclusions that can be drawn and some possible implications of their conclusions.

Teacher Tasks

Create lesson plans around data related to the topic at hand (from references, textbooks, or student activities). Type the data into the MECC Graph data-entry screen, graph the data, print the data, and duplicate copies for each student in class.

Discuss methods of collecting data and sources of data. Because making graphs with MECC Graph is so quick and easy, generate several styles of graphs with the same data. Discuss appropriate and inappropriate styles of graphs for displaying data.

Distribute graphs on which you have adjusted the data to support some idea. Discuss how data can be manipulated and how students should analyze graphs carefully.

NAME / NUMBER DATA SHEET

TITLE: ____________________

HORIZONTAL AXIS: ____________________ VERTICAL AXIS: ____________________

= =

LEGEND	LABEL: ________	LABEL: ________	LABEL: ________

NUMBER PAIR DATA SHEET

TITLE:

X-AXIS LABEL: **Y-AXIS LABEL:**

LINE A: **LINE B:** **LINE C:**

mecc

II. Orientation Activities

MECC Graph is an easy-to-use graphing utility. Students are able to use the programs successfully with very little instruction. However, you may want to provide your students with a structured introduction to the use of the MECC Graph programs before they begin collecting and graphing their own data.

This section of the manual provides you with two student activities (pages 12-17 and 18-20). These activities are intended to provide the students with ready data appropriate to each graphing program. Each activity directs the students to enter the data and to perform each of the options possible within that program.

Each activity sheet can be duplicated and distributed to the students as needed. You may want to discuss and reinforce how the two types of data differ before the students begin these activities.

Answers to the questions in each of these activities can be found in the "Teacher Answer Keys" section, beginning on page 21.

GRAPH NAME/NUMBER DATA Program Activity

You may find the following activity helpful as you try to become familiar with how to use the GRAPH NAME/NUMBER DATA program.

Study the following information and carry out the tasks listed in the activity.

Suppose you wanted to study the accuracy of a television station's weather forecasts.

Each evening during the television news, the meteorologist gives the high temperature for that day and predicts the high temperatures for the four following days.

For each of twelve days, record the actual high temperature as well as the temperatures predicted for one and four days in advance.

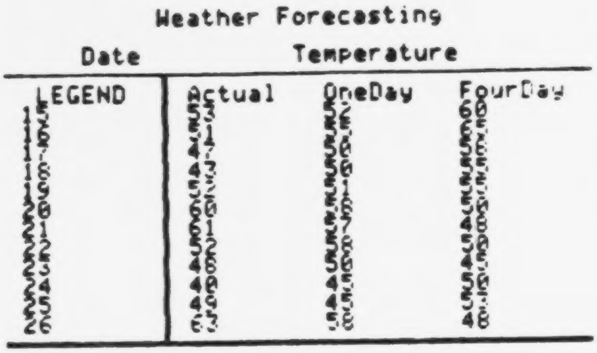
Here is the weather information as you may have collected it:

Date	The Actual Temperature	One-Day Prediction	Four-Day Prediction
October 15	53 degrees	52 degrees	60 degrees
October 16	51 degrees	55 degrees	65 degrees
October 17	47 degrees	50 degrees	58 degrees
October 18	43 degrees	50 degrees	55 degrees
October 19	52 degrees	51 degrees	55 degrees
October 20	60 degrees	58 degrees	50 degrees
October 21	61 degrees	57 degrees	48 degrees
October 22	52 degrees	58 degrees	50 degrees
October 23	48 degrees	50 degrees	45 degrees
October 24	40 degrees	45 degrees	50 degrees
October 25	49 degrees	45 degrees	53 degrees
October 26	63 degrees	58 degrees	48 degrees

Use the weather data shown above and MECC Graph to perform the tasks listed below:

- Enter the data from the chart above.
- Display the statistics for each set of data.
- Print the data-entry screen in small size.
- Generate a line graph from the data.
- Print the line graph in small size.

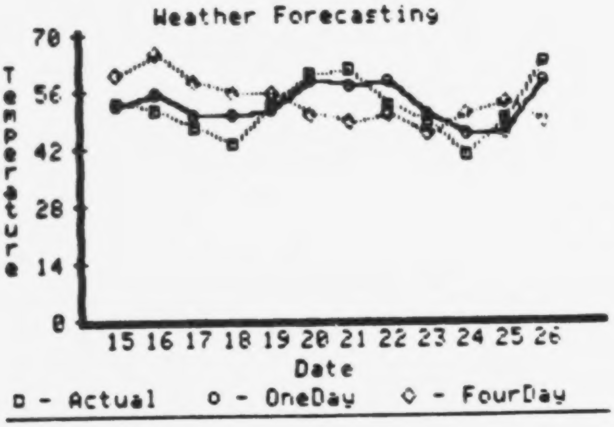
Carefully cut out the data-entry screen that you printed and paste it in the space next to the data-entry screen shown below. If you have entered the data correctly, the two screens should look alike.



Weather Forecasting

Date	Temperature		
LEGEND	Actual	OneDay	FourDay
15	53	52	60
16	51	55	65
17	47	50	[illegible]
18	43	50	55
19	[illegible]	51	55
20	60	[illegible]	50
21	61	57	48
22	52	58	50
23	48	50	45
24	40	45	50
25	49	45	[illegible]
26	63	58	48

Carefully cut out the graph that you created and paste it in the space next to the graph shown below. If the two data-entry screens above look alike, the two graphs should also look alike.



Carefully study the graph. Were the meteorologist's temperature predictions very accurate? ____________________

From this graph, can you tell how accurate or inaccurate the predictions were?

Suppose you wanted the graph to make differences between the actual and predicted temperatures more obvious. To make a graph that emphasizes those differences, you need to change the scale of the graph you have just created.

Perform the tasks listed below:

- Adjust the scale of the graph to show greater differences between the predicted and the actual temperatures.
- Print the new line graph (small size) that resulted from changing the scale.

Carefully cut out the graph and paste it in the space below. If you have correctly adjusted the y-axis scale, your new graph should show greater differences between the actual and predicted temperatures. It should show up the bad forecasts more clearly.

Does the new graph do a better job of displaying the data and describing the results of the study than your first graph did? ______ Why or why not?

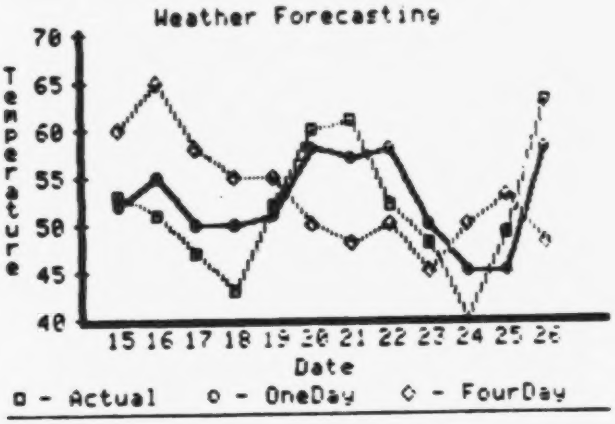
Who might want to use the first graph? Why?

Who might want to use the second graph? Why?

Perform the tasks listed below:

- Graph the same data as a bar graph.
- Adjust the scale as you did on the line graph.
- Print the bar graph (small size).

Carefully cut out the bar graph and paste it in the space provided next to the line graph below. Which type of graph (line graph or bar graph) does the best job of displaying and describing the data collected? ____________ Why?



Perform the tasks listed below:

- Graph the same data as a series of pie graphs.
- Print the pie graphs (small size).

Carefully cut out each of the pie graphs. Paste each graph in the space provided below. Are pie graphs a useful way to display this type of data? ______ Why or why not?

Could the data be rewritten so as to produce useful graphs?

Perform the tasks listed below:

- Record a new set of data. For both the one-day and four-day forecasts, enter the number of times the forecast was exact and the number of times it was within two degrees, four degrees, six degrees, and so on.
- Graph the data as a series of pie graphs.
- Print the pie graphs and paste them below.

Compare the new and old sets of pie graphs. Which set best communicates the accuracy of the weather forecasts?

GRAPH NUMBER PAIR DATA Program Activity

You may find the following activity helpful as you try to become familiar with how to use the GRAPH NUMBER PAIR DATA program.

Study the following information and perform each of the tasks listed in the activity.

Suppose you wanted to study the effects of exercise on a person's pulse rate.

You would measure the resting pulse rate (beats/minute) of several people. You would also take several measurements of each person's pulse rate at certain times while they are doing the exercise and again after they have finished the exercise.

You would record each person's pulse rates along with the time at which each measurement was taken.

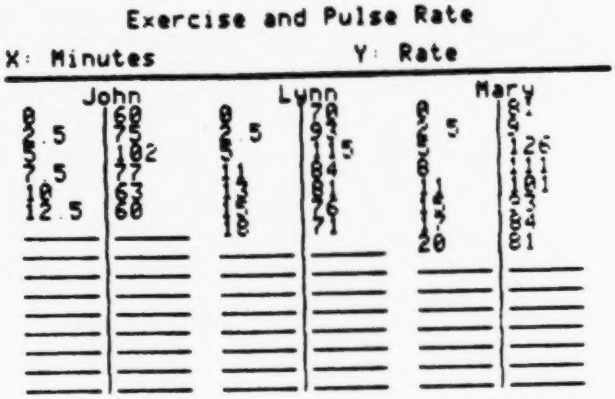
Here is the pulse-rate information as you may have collected it:

John		Lynn		Mary	
Time	Rate	Time	Rate	Time	Rate
0	60	0	70	0	81
2.5	75	2.5	93	2.5	99
5	102	5	115	5	126
7.5	77	11	84	8	111
10	63	13	81	11	101
12.5	60	15	76	15	93
		18	71	17	84
				20	81

Use the pulse-rate data shown above and MECC Graph to perform the following tasks:

- Enter the data from the chart shown above.
- Print the data-entry screen in small size.
- Graph the data.
- Print the line graph in small size.

Carefully cut out the data-entry screen that you printed and paste it in the space next to the data-entry screen shown below. If you have entered the data correctly, the two screens should look alike.

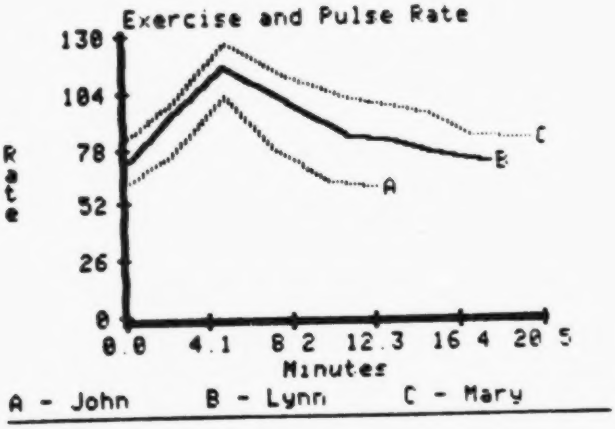


Exercise and Pulse Rate

X: Minutes Y: Rate

John		Lynn		Mary	
0	60	0	70	0	81
2.5	75	2.5	93	2.5	[illegible]
5	102	5	115	5	126
7.5	77	[illegible]	[illegible]	8	111
10	63	11	84	11	101
12.5	60	[illegible]	81	14	93
		[illegible]	76	17	84
		18	71	20	81

Carefully cut out the graph that you created and paste it in the space next to the graph shown below. If the two data-entry screens above look alike, the two graphs should also look alike.

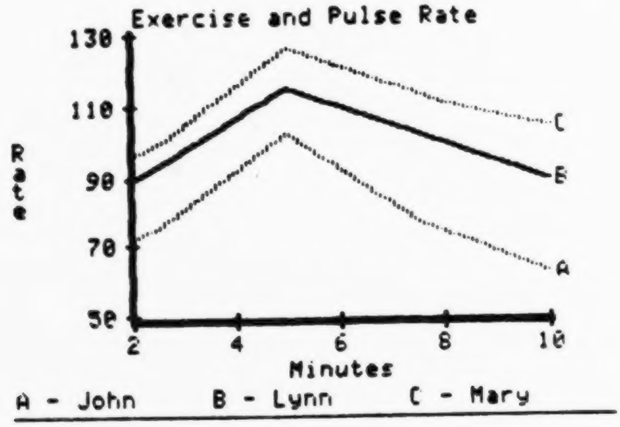


The differences between the three sets of data can easily be seen displayed on the graph. You may, however, want to change the scale of the graph to emphasize those differences.

Perform the tasks listed below:

- Adjust the scale of the graph to show only those pulse rates measured between 2 and 10 minutes and raise the bottom of the graph to 50 in order to show greater differences among each person's pulse rates.
- Print the adjusted graph (small size).

Carefully cut out the adjusted graph and paste it in the space provided below. The new graph will show just the part you wanted to see and the differences will appear greater than on the previous graph. If you have adjusted the scales correctly, the two graphs should look alike.



Teacher Answer Keys

GRAPH NAME/NUMBER DATA Program Activity

You may find the following activity helpful as you try to become familiar with how to use the GRAPH NAME/NUMBER DATA program.

Study the following information and carry out the tasks listed in the activity.

Suppose you wanted to study the accuracy of a television station's weather forecasts.

Each evening during the television news, the meteorologist gives the high temperature for that day and predicts the high temperatures for the four following days.

For each of twelve days, record the actual high temperature as well as the temperatures predicted for one and four days in advance.

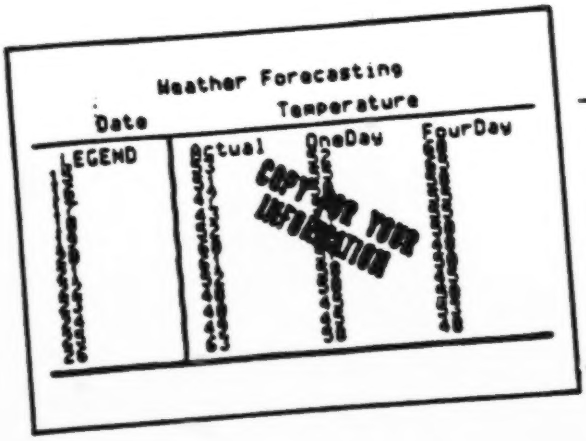
Here is the weather information as you may have collected it:

Date	The Actual Temperature	One-Day Prediction	Four-Day Prediction
October 15	53 degrees	52 degrees	60 degrees
October 16	51 degrees	55 degrees	65 degrees
October 17	47 degrees	50 degrees	58 degrees
October 18	43 degrees	50 degrees	55 degrees
October 19	52 degrees	51 degrees	55 degrees
October 20	60 degrees	58 degrees	50 degrees
October 21	61 degrees	57 degrees	48 degrees
October 22	52 degrees	58 degrees	50 degrees
October 23	48 degrees	50 degrees	45 degrees
October 24	40 degrees	45 degrees	50 degrees
October 25	49 degrees	45 degrees	53 degrees
October 26	63 degrees	58 degrees	48 degrees

Use the weather data shown above and MECC Graph to perform the tasks listed below:

- Enter the data from the chart above.
- Display the statistics for each set of data.
- Print the data-entry screen in small size.
- Generate a line graph from the data.
- Print the line graph in small size.

Carefully cut out the data-entry screen that you printed and paste it in the space next to the data-entry screen shown below. If you have entered the data correctly, the two screens should look alike.


Weather Forecasting

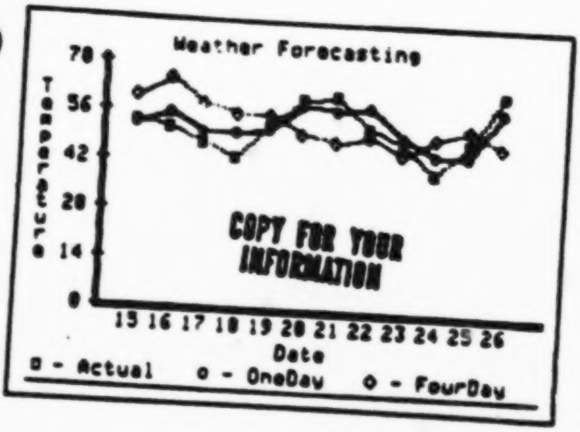
Date	Temperature		
LEGEND	Actual	OneDay	FourDay

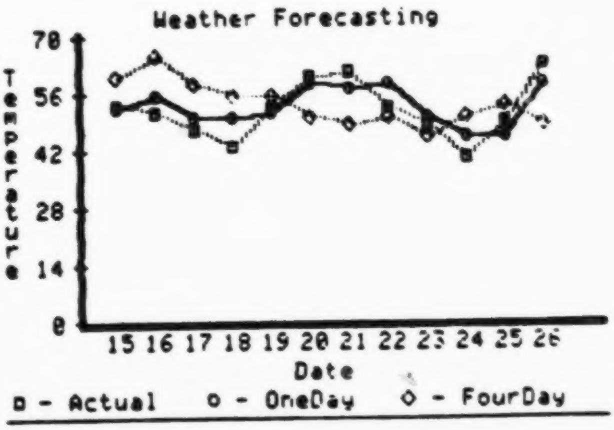
COPY FOR YOUR INFORMATION

Weather Forecasting

Date	Temperature		
LEGEND	Actual	OneDay	FourDay
15	53	52	60
16	[illegible]	[illegible]	[illegible]
17	[illegible]	[illegible]	[illegible]
18	[illegible]	[illegible]	[illegible]
19	[illegible]	[illegible]	[illegible]
20	[illegible]	[illegible]	[illegible]
21	[illegible]	[illegible]	[illegible]
22	[illegible]	[illegible]	[illegible]
23	[illegible]	[illegible]	[illegible]
24	[illegible]	[illegible]	[illegible]
25	[illegible]	[illegible]	[illegible]
26	63	58	48

Carefully cut out the graph that you created and paste it in the space next to the graph shown below. If the two data-entry screens above look alike, the two graphs should also look alike.





Carefully study the graph. Were the meteorologist's temperature predictions very accurate? It's hard to tell.

From this graph, can you tell how accurate or inaccurate the predictions were?

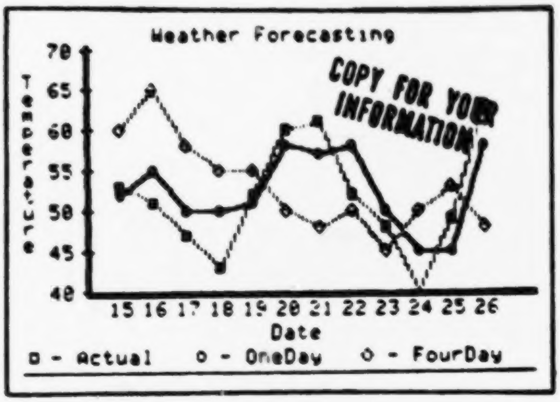
Not easily, because all the lines are so close together.

Suppose you wanted the graph to make differences between the actual and predicted temperatures more obvious. To make a graph that emphasizes those differences, you need to change the scale of the graph you have just created.

Perform the tasks listed below:

- Adjust the scale of the graph to show greater differences between the predicted and the actual temperatures.
- Print the new line graph (small size) that resulted from changing the scale.

Carefully cut out the graph and paste it in the space below. If you have correctly adjusted the y-axis scale, your new graph should show greater differences between the actual and predicted temperatures. It should show up the bad forecasts more clearly.



Does the new graph do a better job of displaying the data and describing the results of the study than your first graph did? **Yes.** Why or why not?

The new graph is better because the differences between the data and plotted lines are more easily seen.

Who might want to use the first graph? Why?

Someone who wanted to demonstrate that weather predictions are nearly accurate. This graph appears to show little difference between actual and predicted temperatures.

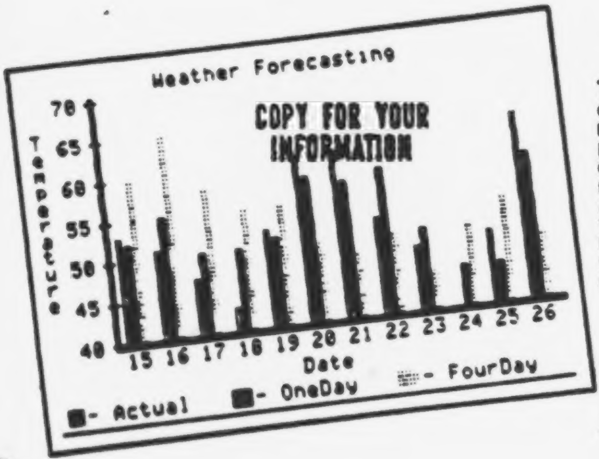
Who might want to use the second graph? Why?

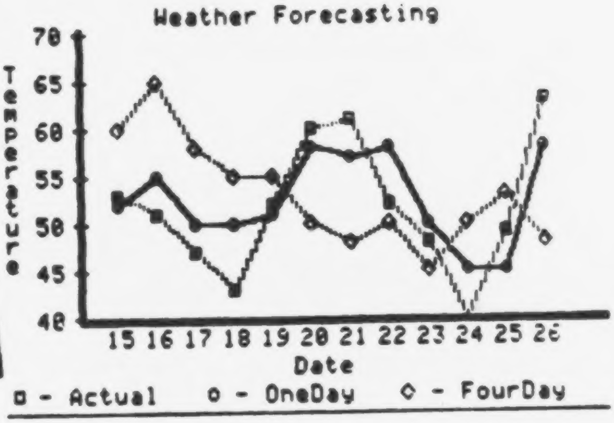
Someone who wanted to demonstrate that weather predictions are not very accurate. This graph emphasizes the differences between actual and predicted temperatures.

Perform the tasks listed below:

- Graph the same data as a bar graph.
- Adjust the scale as you did on the line graph.
- Print the bar graph (small size).

Carefully cut out the bar graph and paste it in the space provided next to the line graph below. Which type of graph (line graph or bar graph) does the best job of displaying and describing the data collected? Line graph. Why?





It is easier to see changes in actual and predicted temperatures on a line graph.

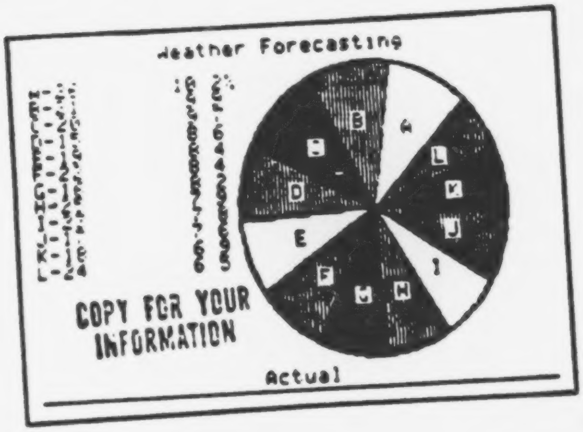
Perform the tasks listed below:

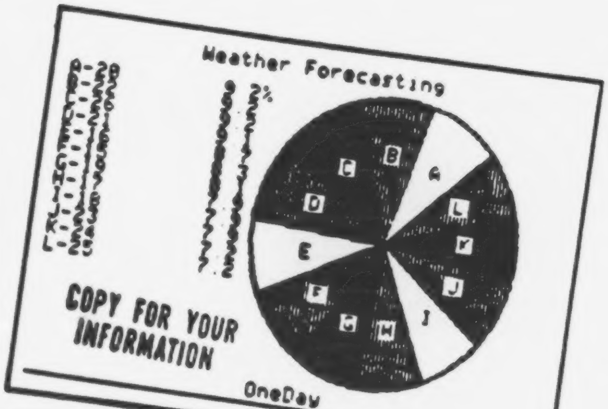
- Graph the same data as a series of pie graphs.
- Print the pie graphs (small size).

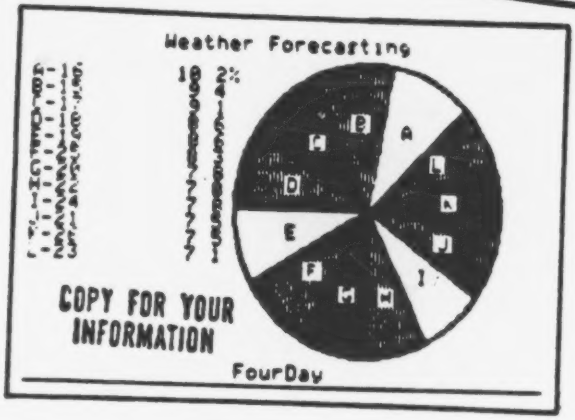
Carefully cut out each of the pie graphs. Paste each graph in the space provided below. Are pie graphs a useful way to display this type of data? No. Why or why not?

The data displayed on these pie graphs makes no sense; it cannot be interpreted.

Could the data be rewritten so as to produce useful graphs? Yes.





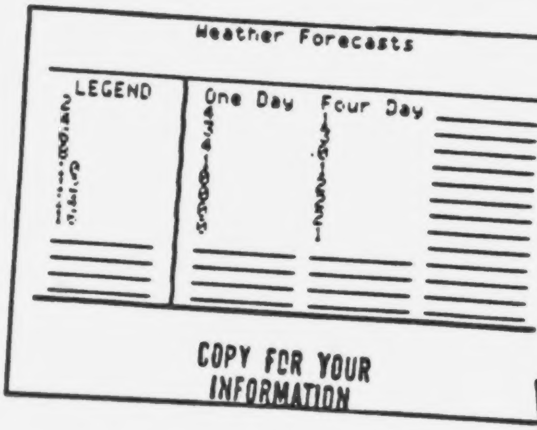


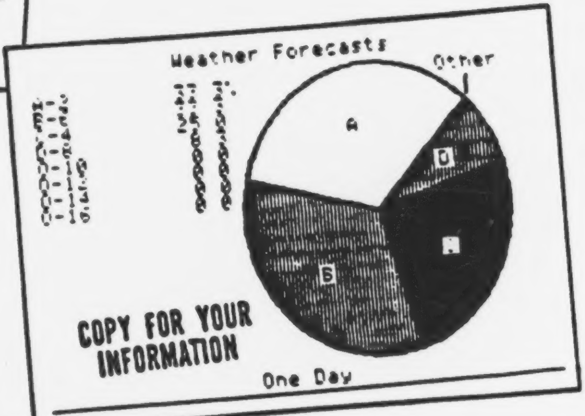
632

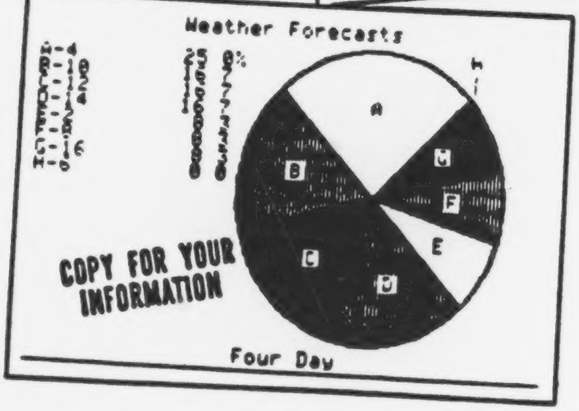
Perform the tasks listed below:

- Record a new set of data. For both the one-day and four-day forecasts, enter the number of times the forecast was exact and the number of times it was within two degrees, four degrees, six degrees, and so on.
- Graph the data as a series of pie graphs.
- Print the pie graphs and paste them below.

Compare the new and old sets of pie graphs. Which set best communicates the accuracy of the weather forecasts? **The new set, which is more easily interpreted.**


Weather Forecasts
LEGEND
One Day
Four Day
COPY FOR YOUR INFORMATION





GRAPH NUMBER PAIR DATA Program Activity

You may find the following activity helpful as you try to become familiar with how to use the GRAPH NUMBER PAIR DATA program.

Study the following information and perform each of the tasks listed in the activity.

Suppose you wanted to study the effects of exercise on a person's pulse rate.

You would measure the resting pulse rate (beats/minute) of several people. You would also take several measurements of each person's pulse rate at certain times while they are doing the exercise and again after they have finished the exercise.

You would record each person's pulse rates along with the time at which each measurement was taken.

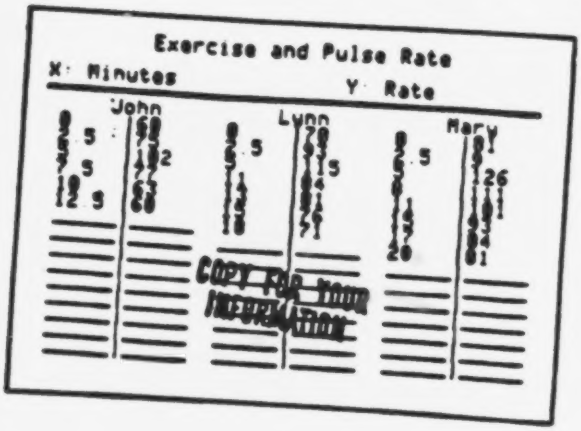
Here is the pulse-rate information as you may have collected it:

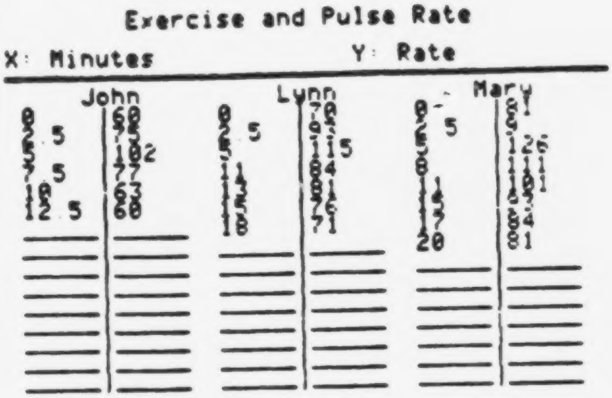
John		Lynn		Mary	
Time	Rate	Time	Rate	Time	Rate
0	60	0	70	0	81
2.5	75	2.5	93	2.5	99
5	102	5	115	5	126
7.5	77	11	84	8	111
10	63	13	81	11	101
12.5	60	15	76	15	93
		18	71	17	84
				20	81

Use the pulse-rate data shown above and MECC Graph to perform the following tasks:

- Enter the data from the chart shown above.
- Print the data-entry screen in small size.
- Graph the data.
- Print the line graph in small size.

Carefully cut out the data-entry screen that you printed and paste it in the space next to the data-entry screen shown below. If you have entered the data correctly, the two screens should look alike.

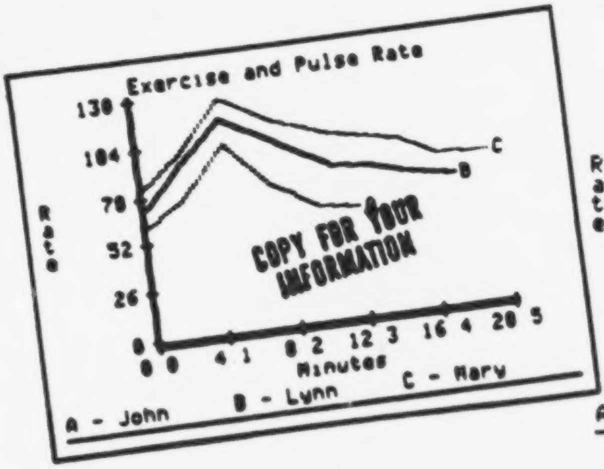


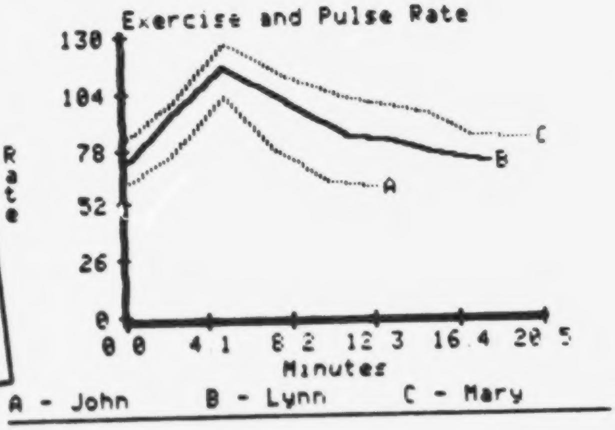

Exercise and Pulse Rate

X: Minutes Y: Rate

John		Lynn		Mary	
0	60	0	70	0	81
2.5	75	2.5	93	2.5	[illegible]
5	102	5	115	5	126
7.5	77	11	84	8	111
10	63	13	81	11	101
12.5	60	15	76	14	[illegible]
		18	71	17	84
				20	81

Carefully cut out the graph that you created and paste it in the space next to the graph shown below. If the two data-entry screens above look alike, the two graphs should also look alike.



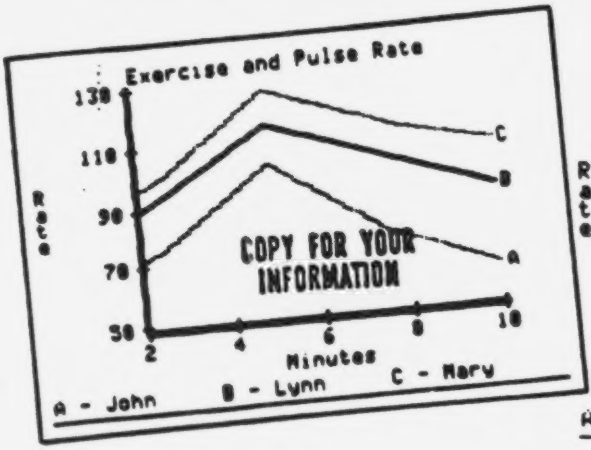


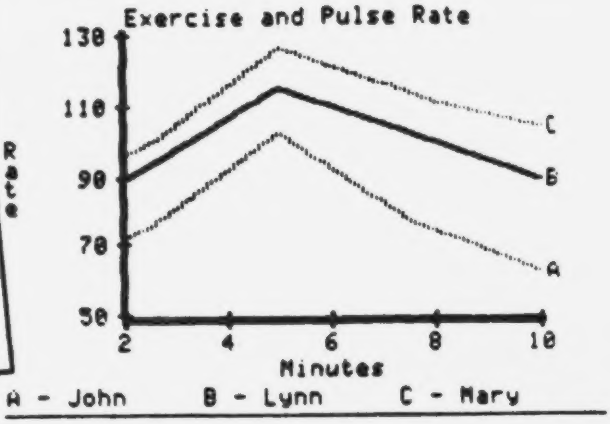
The differences between the three sets of data can easily be seen displayed on the graph. You may, however, want to change the scale of the graph to emphasize those differences.

Perform the tasks listed below:

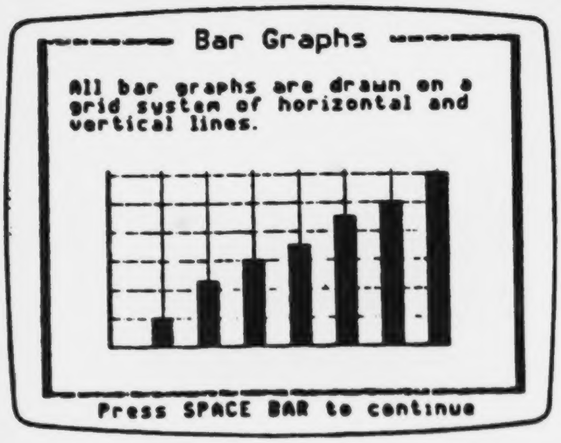
- Adjust the scale of the graph to show only those pulse rates measured between 2 and 10 minutes and raise the bottom of the graph to 50 in order to show greater differences among each person's pulse rates.
- Print the adjusted graph (small size).

Carefully cut out the adjusted graph and paste it in the space provided below. The new graph will show just the part you wanted to see and the differences will appear greater than on the previous graph. If you have adjusted the scales correctly, the two graphs should look alike.





630



Bar Graphs

All bar graphs are drawn on a grid system of horizontal and vertical lines.

Press SPACE BAR to continue

SOFTWARE SUMMARY

Company: Mecc A136
Title: Graph Primer
Activity: Bar Graph

Objective:

MFMT 2.3.2 Use Information from Graphs
Skill: UG2 Identify information on a bar graph
UG4 Identify intervals on horizontal or vertical scales

Activity Summary

This program was designed to reinforce a basic understanding of the concepts of graph construction and analysis. It reviews terminology and the use of line, bar and pie graphs. Mecc Graph Primer is intended to be a companion to the MECC Graph program, which is a graphing utility that allows students to enter data and create their own graphs.

At the main menu the student can select a type of graph to review: #1. Line Graphs, #2. Bar Graphs, #3 Pie Graphs. The general information option #4 reviews Mecc software information and is not directed towards the student.

If the student selects option #2, he/she will begin the Exploring Bar Graphs activity. This activity will help a student see how a bar graph is constructed, how it relates to real life events and how to interpret a bar graph.

The student has four practice activities to choose from. By pressing #1, the program will display a description of each activity:

2. **Quick Review:** Provides a short review of bar graphs.
3. **Bar Games:** Allows you to control events and create a bar graph.
4. **Find a Fact:** shows you a bar graph and then asks you to find specific data within the graph.
6. **Tell The Story:** presents the task of studying a bar graph and creating a possible story describing the graph. A short sentence is given to get you started.

Students enter their responses by pressing the **Return** key. They press the **Space Bar** only when it is requested at the bottom of the screen.

In the activity **Bar Games**, the student creates a bar graph by choosing one of two activities:

1. Estimate Time
2. Test Your Typing Speed

In the first activity the student is given five chances to estimate the length of ten seconds. The student presses the "S" key to start the program. When he/she feels ten seconds have passed they press the "S" key again to stop the clock. The computer will plot each attempt with a bar.

After the graph is completed, the student is presented with two questions:

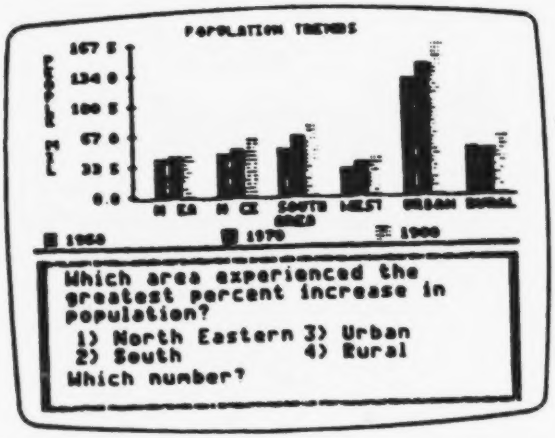
1. Which trial would you consider the best? Why?
2. Which two bars showed the greatest/least variation?

These questions are not to be answered at the computer. The program will ask if the student wants to print out the graph for further examination and if the student wants to create another graph.

The activity Test Your Typing Speed presents the student with the task of typing five different words. They can choose word lengths of seven, eight or nine letters. The student has five attempts to type the word correctly and the results will be plotted on a bar graph. The first letter of a word starts the clock. Pressing Return after each word stops the clock.

The same questions and options as above are offered to the student.

The activity Find a Fact is sufficiently described above. Below is an example of the screen display:



Which area experienced the greatest percent increase in population?
1) North Eastern 3) Urban
2) South 4) Rural
Which number?

The activity Tell the Story presents the student with a graph and the first line of a "story" that describes the information on the graph. The student's story will be in all capital letters. To edit they must press delete or the back arrow key and all characters to the left of the cursor will disappear. When they complete the story, they should press the Return key. Next, they are presented with three options:

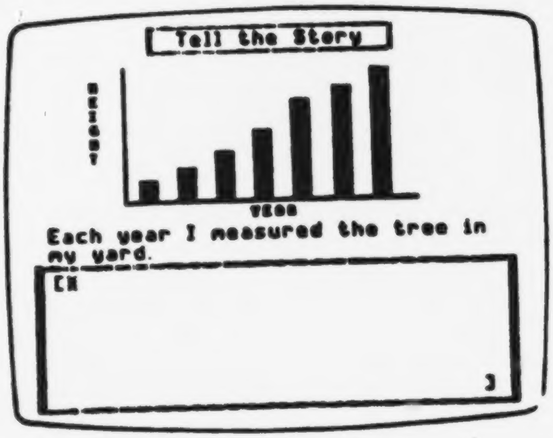
1. Type another story about this graph
2. Type a story about a new graph
3. Return to bar graph menu

Teacher Options

This program offers printer options only. See the MECC manual for more information on printer support.

Suggestions

1. The Quick Review portion of this program could be used as an introductory activity with a small group of students.
2. This program is challenging and should be thoroughly reviewed by the teacher.
3. Find a Fact, is a good practice activity that best matches the skill UG2 and UG4. A student should work with a teacher or aid on this activity until he/she has demonstrated ability to use it independently.
4. This program would best be used after students have been instructed how to create their own graphs. Teachers might want to use the MECC Graph program initially with the students to motivate them to learn about graphs and then use this program for further practice.
5. If the student is using this program for the first time they should begin with option #1 then work their way to option #5.
6. The Tell a Story activity requires skills that are well beyond the MFMT objectives.
7. Press the Escape key twice at any point in the program to get out of an activity.
8. See the MECC manual for more information about this program.



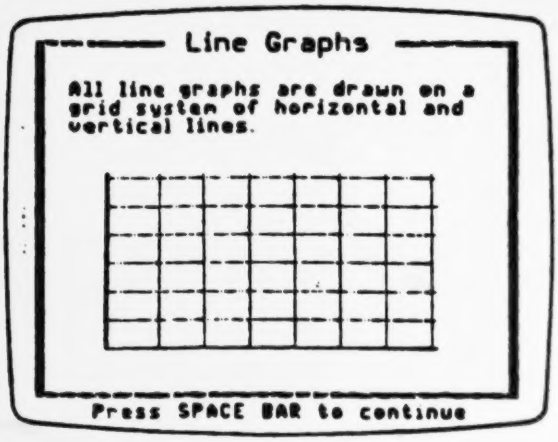
Each year I measured the tree in my yard.

Vocabulary:

increase
decrease
change
fluctuate
rise
decline
growth
trends
data
rate
speed
temperature
*position among
similarities
variation
contrast
produced

DTA application:

Introductory Activity
Developmental Activity (with group)
Guided Practice (with group)



All line graphs are drawn on a grid system of horizontal and vertical lines.

SOFTWARE SUMMARY

Company: Mecc A136
Title: Graph Primer
Activity: Line Graph

Objective:
MFMT 2.3.2 Use Information from Graphs
Skill: UG3 Identify information on a line graph
UG4 Identify intervals on horizontal or vertical scales

Activity Summary

This program was designed to reinforce a basic understanding of the concepts of graph construction and analysis. It reviews terminology and use of line, bar and pie graphs. Mecc Graph Primer is intended to be a companion to the MECC Graph program, which is a graphing utility that allows students to enter data and create their own graphs.

At the main menu the student can select a type of graph to review: #1. Line Graphs, #2. Bar Graphs, #3 Pie Graphs. The general information option #4 reviews Mecc software information and is not directed towards the student.

If the student selects option #1, he/she will begin the Exploring Line Graphs activity. This activity will help a student see how a line graph is constructed, how it relates to real life events and how to interpret a line graph.

The student has six practice activities to choose from. By pressing #1, the program will display a description of each activity:

2. **Quick Review:** Provides a short review of line graphs.
3. **Line Games:** Allows you to control events and create a line graph.
4. **Which Line?:** will present a line graph of three lines. A question will appear below the graph. You are to select the line that best describes the events described in the question.
5. **Find a Fact:** shows you a line graph and then asks you to find specific data within the graph.
6. **Tell The Story:** presents the task of studying a line graph and creating a possible story describing the graph. A short sentence is given to get you started.

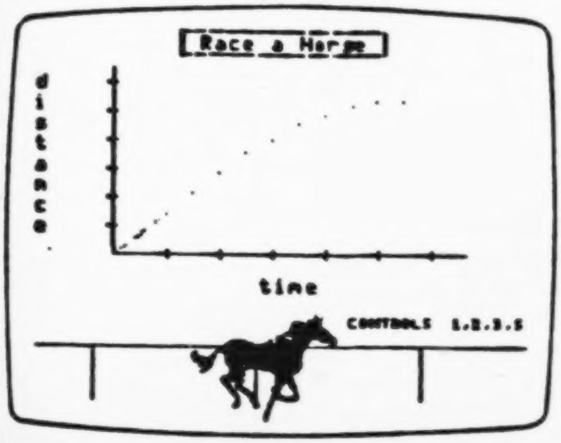
Students enter their responses by pressing the **Return** key. They press the **Space Bar** only when it is requested at the bottom of the screen.

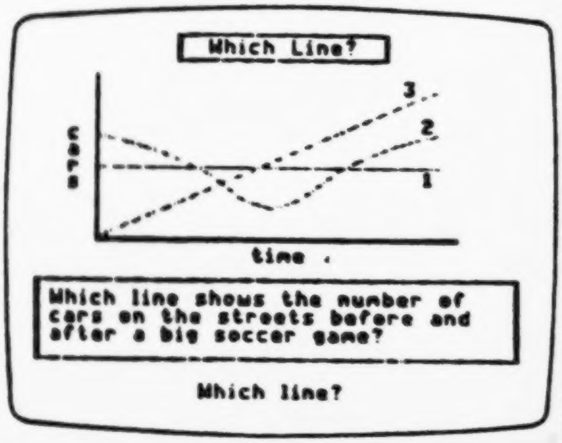
In the activity **Line Games**, the student creates a line graph by selecting a horse or a car. They control the speed of travel for either of these by pressing the number 1, 2, or 3 keys (slow, medium and fast) or the "S" key for stop. After sixty seconds the student will see a line graph that represents the time and distance that they controlled. After the graph is completed, the student is presented with two questions:

1. How far did the horse/car travel?
2. Between what two times did the horse/car travel the fastest/slowest?

These questions are not to be answered at the computer. The program will ask if the student wants to print out the graph for further examination.

The activity **Which Line?** is sufficiently explained above. Below is an example the screen display:

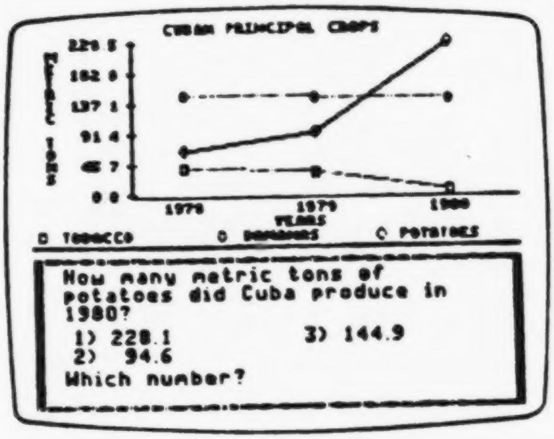




Which line shows the number of cars on the streets before and after a big soccer game?

Which line?

The activity Find a Fact is also sufficiently described above. Below is an example of the screen display:



How many metric tons of potatoes did Cuba produce in 1980?

1) 228.1
2) 94.6
3) 144.9

Which number?

The activity Tell the Story presents the student with a graph and the first line of a "story" that describes the information on the graph. The student's story will be in all capital letters. To edit they press Delete or the back arrow key and all characters to the left of the cursor will disappear. When they complete the story, they should press the Return key. Next, they are presented with three options:

1. Type another story about this graph
2. Type a story about a new graph
3. Return to line graph menu

Teacher Options

This program offers printer options only. See the MECC manual for more information on printer support.

Suggestions

1. The Quick Review portion of this program could be used as an introductory activity with a small group of students.

2. This program is challenging and should be thoroughly reviewed by the teacher.

3. Which Line? and Find a Fact, are good practice activities that best match skills UG3 and UG4. A student should work with a teacher or aid on these activities until he/she has demonstrated ability to use them independently.

4. This program would best be used after students have been instructed how to create their own graphs. Teachers might want to use the MECC Graph program initially with the students to motivate them to learn about graphs and then use this program for further practice.

5. If the student is using this program for the first time they should begin with option #1 then work their way to option #6.

6. The Tell a Story activity requires skills that are well beyond the MFMT objectives.

7. Press the **Escape** key twice at any point in the program to get out of an activity.

8. See the MECC manual for more information about this program.

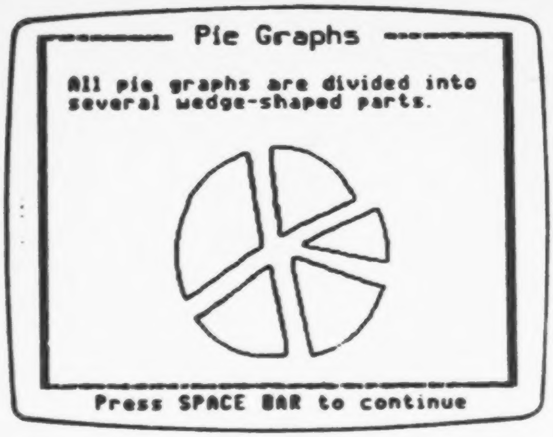
Vocabulary:

increase
decrease
change
fluctuate
rise
decline
growth
trends
data
rate
speed
temperature
constant

DTA Application:

Developmental Activity (with group)
Guided Practice (with group)

644



Pie Graphs

All pie graphs are divided into several wedge-shaped parts.

Press SPACE BAR to continue

SOFTWARE SUMMARY

Company: Mecc A136
Title: Graph Primer
Activity: Pie Graph

Objective:

MFMT 2.3.2 Use Information from Graphs
Skill: UG1 Identify information on a circle graph

Activity Summary

This program was designed to reinforce a basic understanding of the concepts of graph construction and analysis. It reviews terminology and use of line, bar and pie graphs. Mecc Graph Primer is intended to be a companion to the MECC Graph program, which is a graphing utility that allows students to enter data and create their own graphs.

At the main menu the student can select a type of graph to review: #1. Line Graphs, #2. Bar Graphs, #3 Pie Graphs. The general information option #4 reviews Mecc software information and is not directed towards the student.

If the student selects option 3, he/she will begin the Exploring Pie Graphs activity. This activity will help a student see how a pie graph is constructed, how it relates to real life events and how to interpret a pie graph.

The student has three practice activities to choose from. By pressing #1, the program will display a description of each activity:

2. Quick Review: Provides a short review of line graphs.
3. Pie Games: Allows you to control events and create a pie graph.
4. Tell The Story: presents the task of studying a pie graph and creating a possible story describing the graph. A short sentence is given to get you started.

Students enter their responses by pressing the Return key. They press the **Space Bar** only when it is requested at the bottom of the screen.

In the activity **Pie Games**, the student creates a pie graph by selecting one of two activities:

1. School Principal
2. Pet Store Owner

In the **School Principal** activity the student must decide on the number of students that received a letter grade of: A, B, C, D, or F.

In the **Pet Store Owner** activity the student must distribute 720 fish into catagories of: Betta, Catfish, Goldfish, Guppy, Neon or Zebra.

The program will record the following information and create a pie graph:

1. The total number of items
2. The number of parts the total is divided into
3. The number of items in each part

After the graph is completed, the student is presented with the request:

"Describe how each part of the pie graph compares to the total amount."

This request is not to be answered at the computer. The program will ask if the student wants to print out the graph for further examination.

The activity **Tell the Story** presents the student with a graph and the first line of a "story" that describes the information on the graph. The student's story will be in all capital letters. To edit they press **Delete** or the back arrow key and all the characters to the left of the cursor will disappear. When they complete the story, they should press the **Return** key. Next, they are presented with three options:

1. Type another story about this graph
2. Type a story about a new graph
3. Return to pie graph menu

Teacher Options

This program offers printer options only. See the MECC manual for more information on printer support.

Suggestions

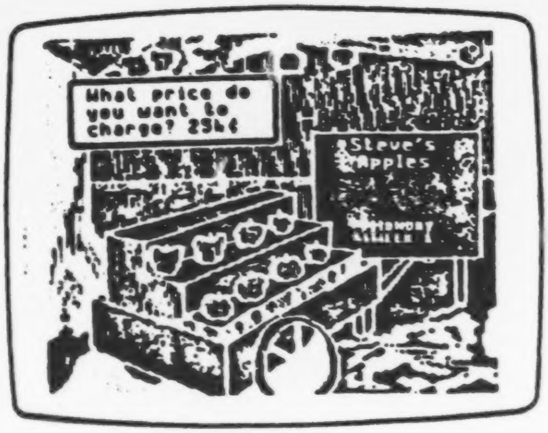
1. The Quick Review portion of this program could be used as an introductory activity with a small group of students.
2. This program is challenging and should be thoroughly reviewed by the teacher.
3. This program would best be used after students have been instructed how to create their own graphs. Teachers might want to use the MECC Graph program initially with the students to motivate them to learn about graphs and then use this program for further practice.
4. If the student is using this program for the first time they should begin with option #1 then work their way to option #3.
5. The Tell a Story activity requires skills that are well beyond the MFMT objectives.
6. Press the Escape key twice at any point in the program to get out an activity.
7. See the MECC manual for more information about this program.

Vocabulary:

component
percent
part
portion
share
values
fraction
total

DTA application:

Introductory Activity
Developmental Activity (with group)
Guided Practice (with group)



What price do you want to charge? 25¢

SOFTWARE SUMMARY

Company: MECC A-160
Title: MARKET PLACE
Activity: SELL APPLES

OBJECTIVES:

MFMT: 2.3.1 USE INFORMATION FROM TABLES
2.3.2 USE INFORMATION FROM GRAPHS
5.1.2 SOLVE MONEY PROBLEMS USING ADDITION AND SUBTRACTION
5.1.3 SOLVE MONEY PROBLEMS USING MULTIPLICATION AND DIVISION

SKILLS: UT1 IDENTIFY INFORMATION ON A TABLE
UG3 IDENTIFY INFORMATION ON A LINE GRAPH
MAS1 SOLVE MONEY PROBLEMS USING ADDITION AND SUBTRACTION
MMD1 SOLVE MONEY PROBLEMS USING MULTIPLICATION AND DIVISION

ACTIVITY SUMMARY

In SELL APPLES, students set up their own apple stand and then determine the day's price for selling apples. The object of the program is to figure out the price that will bring in the most income.

Students are asked to set a price for selling apples for one day. The program will give the number of apples sold and the income for that day. The student, with help from the computer, figures the income by multiplying the price times the apples sold. The information is then put in table form day by day. The table is converted into a line graph to futher illustrate sales and income. The students are asked to predict, based on the previous day's income, how they can adjust the price and earn more income. If the best price is not determined in the first week, students have an opportunity to play for three more weeks.

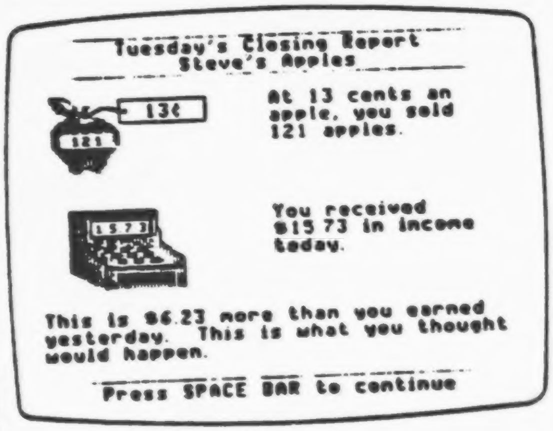
The best price is a randomly generated number so that it changes each time the students use the program.

TEACHER OPTIONS

There are no teacher management options.

SUGGESTIONS

1. Review the vocabulary before beginning the program.
2. Use the student worksheets from the manuel.
   (A review of tables and graphs is included as well as a review of dollars and cents.)
3. D.T.A. Applications:
   - Developmental Activity
   - Guided Practice
   - Vocabulary: price--the amount of money a person pays for a product
     income--the money received from the sale of a product
4. See the MECC manual for futher instructions.



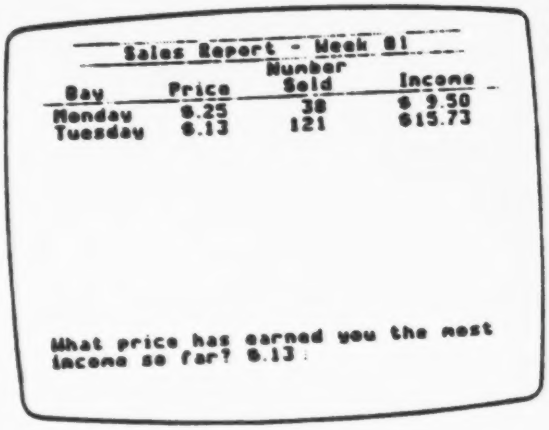
```
Tuesday's Closing Report
     Steve's Apples

            At 13 cents an
            apple, you sold
            121 apples.

            You received
            $15.73 in income
            today.

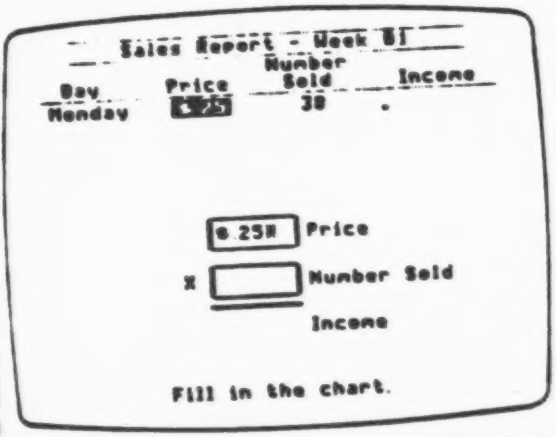
This is $6.23 more than you earned
yesterday.  This is what you thought
would happen.

   Press SPACE BAR to continue
```



```
      Sales Report - Week 01
                   Number
Day        Price    Sold      Income
Monday     $.25      38       $ 9.50
Tuesday    $.13     121       $15.73

What price has earned you the most
income so far? $.13
```

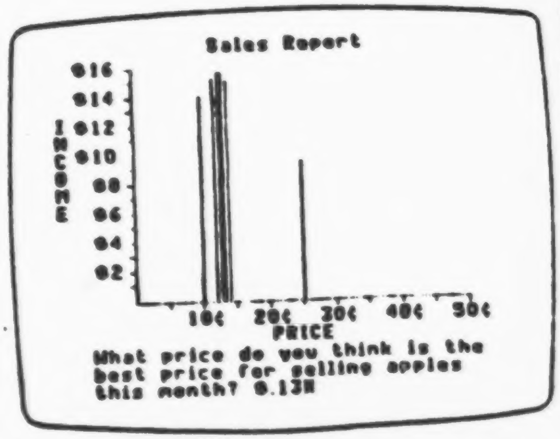


```
      Sales Report - Week 01
                   Number
Day        Price    Sold      Income
Monday     $.25      38         .

          $.25    Price

      x           Number Sold
          ______
                  Income

        Fill in the chart.
```



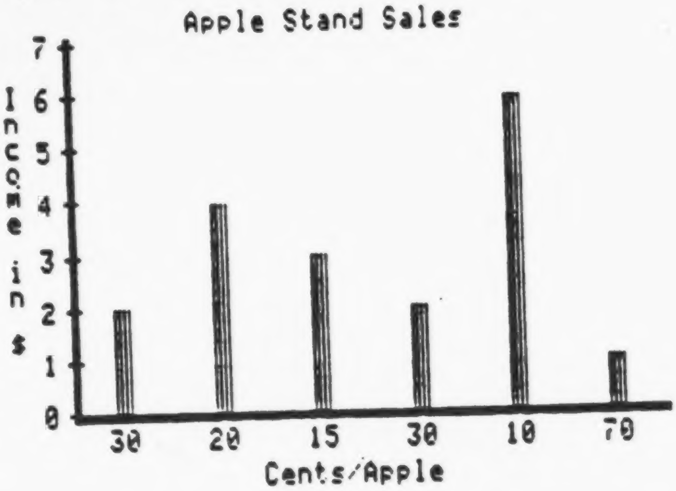
```
What price do you think is the
best price for selling apples
this month? $.13
```

①

BEFORE YOU SELL APPLES

Name ______________________

1. Use the graph to help you answer these questions.



What price earned the most money during the week? ______________

What price earned the least amount of money during the week? ____

How much money was made when the price was 15 cents per Apple? ____________

2. Look at the two columns below. Decide if the amount of money in the left column is more, less, or equal to the amount of money in the right column. Write "more than," "less than," or "equal to" on the blank line between the columns.

Example: $.02 is equal to 2 cents

30 cents is ________________ $.30

45 cents is ________________ $4.50

$2.00 is ________________ 200 cents

$99.00 is ________________ 990 cents

103 cents ________________ $1.03

$0.54 is ________________ 54 cents

②

APTER YOU SELL APPLES

Name ______________________________

Answer these questions after you have used the SELL APPLES program:

1. Were you able to find the "best price" for your apples? ____________

   If so, what was it? ______________

   How long did it take you to find the best price? ________________

2. As you changed prices, how did the number of apples you sold change?

   ____

   ____

3. As the number of apples you sold changed, how did your income change?

   ____

   ____

4. Why do stores want to find the best price for their products?

   ____

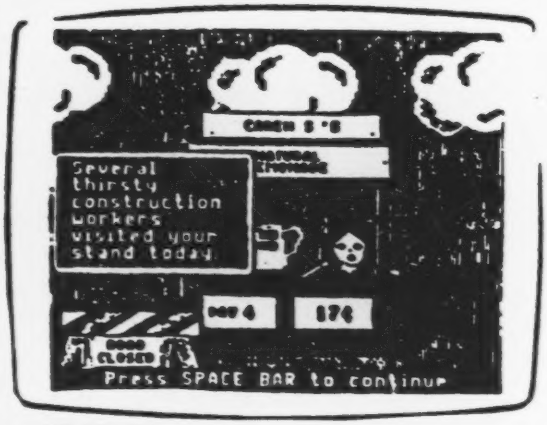
   ____

5. Why do stores sometimes raise and lower their prices?

   ____

   ____

APPLES FOR SALE 25¢



Several thirsty construction workers visited your stand today.

Press SPACE BAR to continue

SOFTWARE SUMMARY

Company: MECC A-160
Title: MARKET PLACE
Activity: SELL LEMONADE

OBJECTIVES

MFMT: 2.3.1 Use Information from Tables
2.1.14 Use a Simple Formula
5.1.2 Solve Money Problems (+,-)
5.1.3 Solve Money Problems (x,/)

SKILLS: UT1 IDENTIFY INFORMATION ON A TABLE
UF2 SUBSTITUTE NUMBERS FOR THE VARIABLES IN THE FORMULA
MAS1 SOLVE MONEY PROBLEMS USING ADDITION AND SUBTRACTION
MMD1 SOLVE MONEY PROBLEMS USING MULTIPLICATION AND DIVISION

ACTIVITY SUMMARY

Sell Lemonade is the most challenging and involved of the Market Place activities.

In this simulation activity the students set up their own lemonade stand with the goal of making the greatest profit. They decide on the price of the lemonade and on the amount of advertising signs and glasses of lemonade to make. Their decisions are based on several variables: the amount of cash that they have on hand, the rising cost of materials and random events in the environment that may effect their business.

As many as three stands can be operated at one time so that students can compete with each other. Students have an initial operating budget of $4.00, and cash on hand that limits their spending on materials.

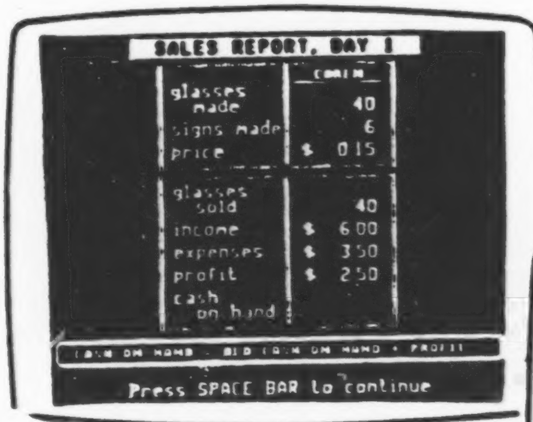
An animation of a passing day is simulated including road construction or surprise thunderstorm. Students can see if these conditions helped or hindered the day's sales. A daily sales report is given which includes income, expenses, profit and remaining cash on hand. At the end of five days, students are given a summary sales report for the entire week. If the students wish to continue the activity, they are told that their operating expenses have increased and the potential for uncontrolled disasters may also increase.

TEACHER OPTIONS

There are no teacher management options.

SUGGESTIONS

1. Review the vocabulary before working with this program.
2. Activity instructions must be carefully read.
3. Use the student worksheets from the manuel.
4. D.T.A. Applications:
    Introductory Activity (Economics)
    Guided Practice
    Vocabulary: price--the amount of money a person pays for a product
    income--the money received from the sale of a product
    advertising--calling attention to a product that is for sale
    expenses--the amount of money that is spent on making and advertising a product
    profit--the money earned once all expenses have been paid
    cash on hand--the total amount of money you have for your business
5. See the MECC manual for further information.

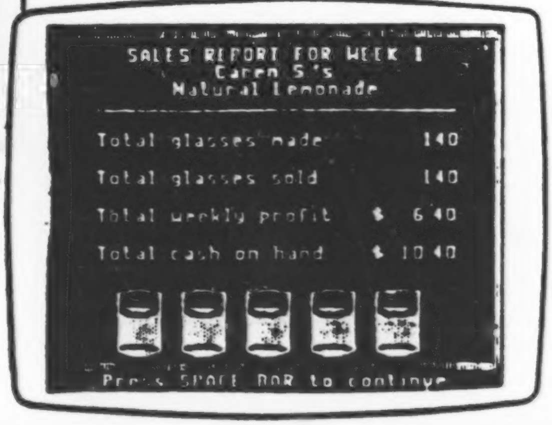


SALES REPORT, DAY 1

	[illegible]
glasses made	40
signs made	6
price	$ 0.15
glasses sold	40
income	$ 6.00
expenses	$ 3.50
profit	$ 2.50
cash on hand	

CASH ON HAND = OLD CASH ON HAND + PROFIT

Press SPACE BAR to continue



SALES REPORT FOR WEEK 1
Caren S's
Natural Lemonade

Total glasses made 140
Total glasses sold 140
Total weekly profit $ 6.40
Total cash on hand $ 10.40

Press SPACE BAR to continue

6

BEFORE YOU SELL LEMONADE

Name ______________________

1. List some ways you could advertise a real lemonade stand.

2. What types of expenses do you think you might have in running a lemonade stand?

3. If you set a price for your lemonade at $.05 per glass and you sell 25 glasses, how would you calculate your income?

4. If you had a profit of $.50, did you make money or lose money that day?

5. If you sell 30 glasses of lemonade at $.06 each and have expenses of $1.20, what is your profit for that day?

6. In managing a lemonade stand, is it better to make a lot of lemonade and have some left over or make a little and sell it all? Why?

7. Is it better to charge a low price and sell a lot of lemonade or to charge a higher price and sell less lemonade? Why?

7a

AFTER YOU SELL LEMONADE

Name ______________________

Answer the questions below as if you were setting up a lemonade stand to make money for yourself.

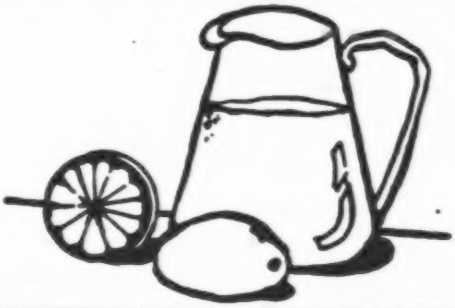
1. What price would you ask for your lemonade? ______________
____

2. Would you make any advertising signs to put up around the neighborhood? Why or why not?
____
____

3. Would you make the same amount of lemonade each day regardless of the weather forecast? Why or why not?
____
____

4. In what ways, other than by using signs, could you advertise your lemonade stand?
____
____

5. How could you cut down on your expenses so that you would make a greater profit?
____
____



mecc

7b

AFTER YOU SELL LEMONADE
(continued)

6. Would you rather operate a lemonade stand by yourself or with a group? What would be the advantages and disadvantages of each?

____

____

7. What do you think would happen if another lemonade stand opened across the street selling lemonade for $.02 per glass less than your own?

____

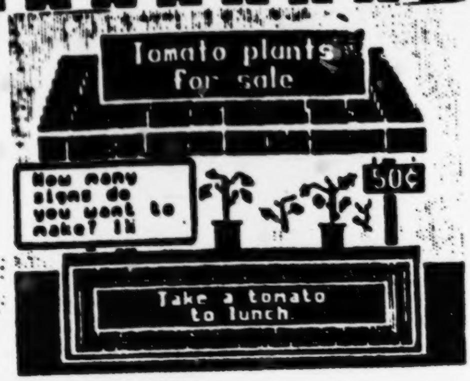
____

8. What would you do to change your business if the other lemonade stand kept cutting its price to stay below yours?

____

____

ICE COLD LEMONADE


Tomato plants
For sale

How many signs do you want to make? 1

50¢

Take a tomato to lunch.

SOFTWARE SUMMARY

Company: MECC A-160
Title: MARKET PLACE
Activity: SELL PLANTS

OBJECTIVES:

MFMT: 2.3.1 USE INFORMATION FROM TABLES
5.1.2 SOLVE MONEY PROBLEMS USING ADDITION AND SUBTRACTION
5.1.3 SOLVE MONEY PROLBEMS USING MULTIPLICATION AND DIVISION

SKILLS: UT1 IDENTIFY INFORMATION ON A TABLE
MAS1 SOLVE MONEY PROBLEMS USING ADDITION AND SUBTRACTION
MMD1 SOLVE MONEY PROBLEMS USING MULTIPLICATION AND DIVISION

ACTIVITY SUMMARY

In SELL PLANTS, students act as business managers to sell 1000 plants raised by their class. They are given 10 days to sell as many plants as possible, while maximizing their profits through advertising. Students determine how much advertising they can afford each day based on the accumulated profit of the day(s) before.

The unit price and start-up expenses are preset, so sales are affected only by varying the amount of advertising. Finding the correct balance of advertising each day will ensure maximum profits and enable students to make enough money to go on a field trip.

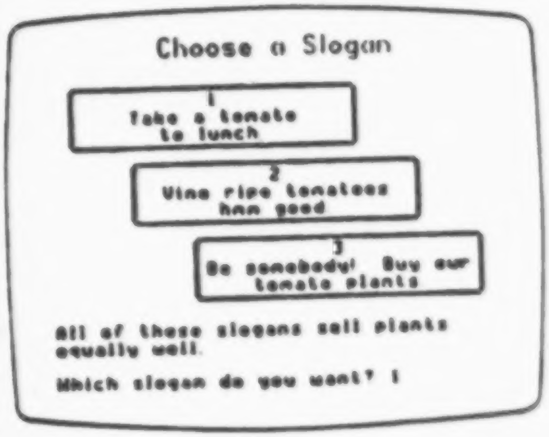
Students are given the sales report for the first day in table form. They are asked to figure that day's profit by finding the income and then subtracting expenses. Students must type in numbers from the table to complete these computations. The RETURN key and SPACE BAR are used to automatically position numbers in correct working form and to display answers. Students are asked to try advertising on the second day, using profits from the previous day to determine how many signs they can afford to buy. Again, they are guided through the computation of profit using data from the table, and asked to decide if advertising increased profit. On succeeding days of the sale, students select how much they will advertise, and profits are computed automatically and recorded on the table. When the 10 sale days are completed, students compute their total profit and determine if their goal for the field trip has been met. Sound is used in this activity.

TEACHER OPTIONS

There are no teacher management options.

SUGGESTIONS

1. Review vocabulary before beginning the program.
2. Encourage students to refer frequently to "# of signs" and "profit" columns on the table to guide them toward the optimal level of advertising for the greatest profit.
3. Use the student worksheets from the manual.
4. DTA Applications:
    - Developmental Activity
    - Guided Practice
    - Vocabulary: price - the amount of money a person pays for a product
        - income - the money received from the sale of a product
        - advertising - calling attention to a product that is for sale
        - expenses - the amount of money that is spent on making and advertising a product
        - profit - the money earned once all expenses have been paid
5. See the MECC manual for further information.



Choose a Slogan

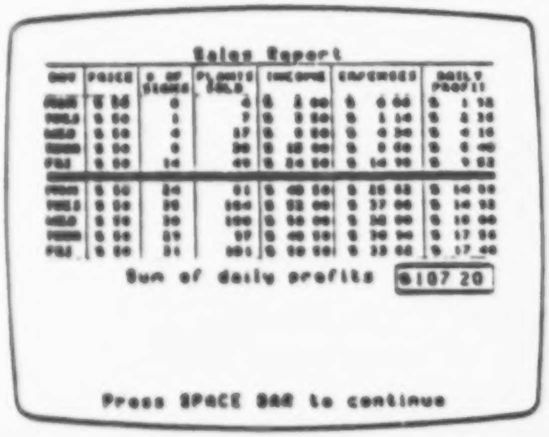
1
Take a tomato
to lunch

2
Vine ripe tomatoes
hmm good

3
Be somebody! Buy our
tomato plants

All of these slogans sell plants equally well.

Which slogan do you want? 1



Sales Report

Sum of daily profits $107 20

Press SPACE BAR to continue

3

BEFORE YOU SELL PLANTS

Name ______________________________

Answer the following questions:

1. What are some ways, other than making signs, that you could advertise a plant store?

____

____

____

2. Do you think it is a good idea for the class to try to sell all of the plants or to have some left over? Why?

____

____

____

3. If you started with 500 plants, and each plant costs $.02 to produce (for fertilizer and seeds), and you sell 200 plants at $.50 each, what is your income, expense, and profit?

Income = ________

Expense = ________

Profit = ________

PLANTS FOR SALE

MECC

4

AFTER YOU SELL PLANTS

Name ________________________

Answer the following questions:

1. Why did advertising affect the number of plants you sold?

____

2. If you kept making more and more signs, do you think you would continue to sell more plants?

____

3. Would you continue to make more profit with more signs?

____

4. How did you decide on the best amount of advertising to use?

____

5

ADVERTISING: WHAT DO YOU THINK?

Name ______________________________

Directions:

Put a 1 by the choice that you like best, a 2 by your second choice, and a 3 by your last choice.

A. Which kind of advertising do you pay the most attention to?

_________ radio

_________ television

_________ newspapers

B. If you wanted to buy something, how would you get information about the thing you wanted to buy?

_________ ask a friend or parents

_________ ask the salesperson in the store

_________ read ads for the different brands of what you wanted to buy

C. What is the most important thing to consider when buying something?

_________ price

_________ how well something is made

_________ how well-known the company is that made the product

Circle the answer that best describes the way you feel:

I think that ads are:

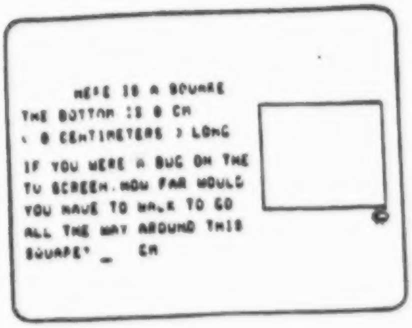
always truthful

mostly truthful

mostly lies

always lies

mecc



```
    HERE IS A SQUARE
THE BOTTOM IS 8 CM
( 8 CENTIMETERS ) LONG
IF YOU WERE A BUG ON THE
TV SCREEN, HOW FAR WOULD
YOU HAVE TO WALK TO GO
ALL THE WAY AROUND THIS
SQUARE? _  CM
```

SOFTWARE SUMMARY

Company: MECC A-738
Title: MATHEMATICS- VOL. 3
Activity: PERIMETERS

OBJECTIVES:

MFMT: 3.2.1 FIND THE PERIMETER AND AREA OF SIMPLE POLYGONS

SKILLS: MPA1 IDENTIFY A SQUARE
MPA2 IDENTIFY A RECTANGLE
MPA3 COMPUTE THE PERIMETER OF VARIOUS POLYGONS

ACTIVITY SUMMARY

PERIMETERS gives the students a definition of perimeter and then instructs them in calculating the perimeter of the following 6 shapes using the basic formulas listed:

a. Square: $P = 4s$
b. Rectangle: $P = 2(l+w)$
c. Parallelogram: $P = 2(b+h)$
d. Rhombus: $P = 4s$
e. Trapezoid: $P = a + b + c + d$
f. Triangle: $P = a + b + c$

Completion of MECC activity, SHAPES OF POLYGONS from the same program is an expected prerequisite for using this program. As the students do the tutorial, they should fill in Worksheet #3 from the manual. The completed handout can be used for reference as the students do the practice problem option.

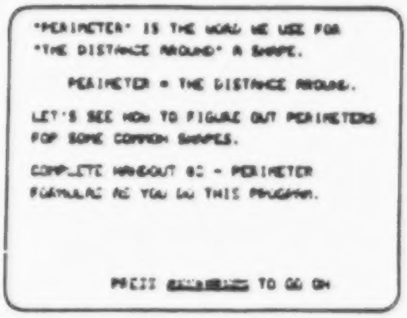
Practice problems are set up so that after the first mistake, the students are given the formula they should be using. After the second mistake, they are shown the correct way of working the problem. Up to 30 practice problems can be chosen. Students are given a score at the end of the practice problems that shows how many problems were solved correctly on the first attempt. There is no sound to the program.

TEACHER OPTIONS

The teacher can decide whether to do the instructional lesson first or have the students go directly to the practice problems for drill. The teacher can also indicate to the student how many practice problems to key in.

SUGGESTIONS

1. Students should complete the program, SHAPES OF POLYGONS, from the same disk before doing this program.
2. Worksheet #3 should be done to aid students in remembering the formulas.
3. D.T.A. Applications:
    - Warm-up (practice problems)
    - Developmental Activity (instructional lesson)
    - Guided Practice (practice problems after using instructional lesson)
    - Independent Practice (practice problems)
4. See MECC manual for further information.



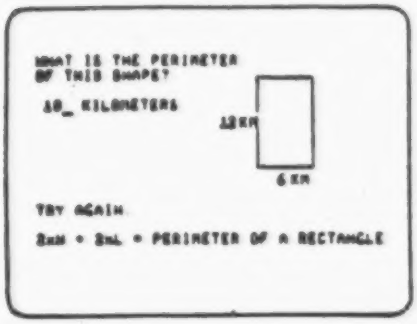
"PERIMETER" IS THE WORD WE USE FOR
"THE DISTANCE AROUND" A SHAPE.

PERIMETER = THE DISTANCE AROUND.

LET'S SEE HOW TO FIGURE OUT PERIMETERS
FOR SOME COMMON SHAPES.

COMPLETE HANDOUT #2 - PERIMETER
FORMULAS AS YOU DO THIS PROGRAM.

PRESS [illegible] TO GO ON

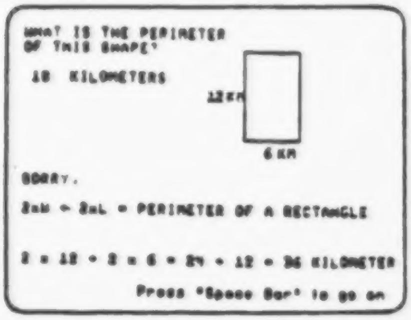


WHAT IS THE PERIMETER
OF THIS SHAPE?

18_ KILOMETERS

TRY AGAIN.

2xW + 2xL = PERIMETER OF A RECTANGLE



WHAT IS THE PERIMETER
OF THIS SHAPE?

18 KILOMETERS

SORRY.

2xW + 2xL = PERIMETER OF A RECTANGLE

2 x 12 + 2 x 6 = 24 + 12 = 36 KILOMETER

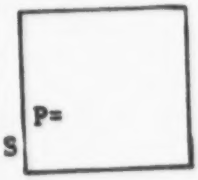
Press "Space Bar" to go on

3

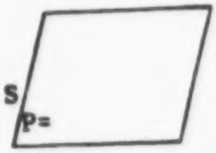
PERIMETER FORMULAS

Name: ______________________

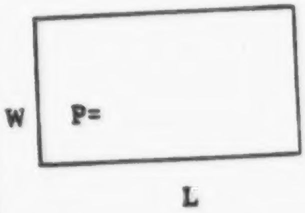
As you run the program PERIMETERS copy the formulas on this sheet for your reference.



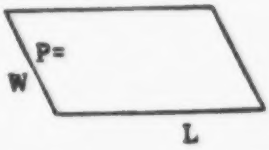
PERIMETER OF A SQUARE



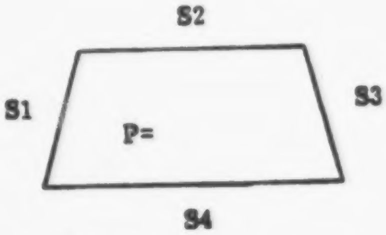
PERIMETER OF A RHOMBUS



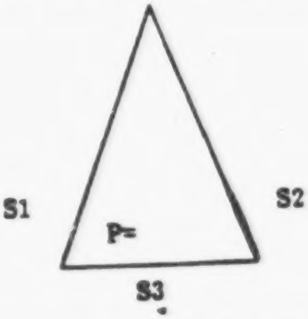
PERIMETER OF A RECTANGLE



PERIMETER OF A PARALLELOGRAM



PERIMETER OF A TRAPEZOID



PERIMETER OF A TRIANGLE

PERIMETER FORMULAS (Page 2)

Now that you have finished running PERIMETERS, give your definition of the word "perimeter": ______________________________

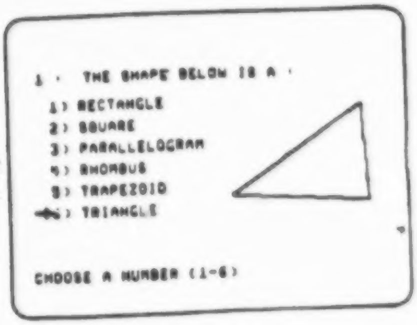
____

____

After running the "practice problems", record the number of practice problems you did and your score.

NUMBER OF PROBLEMS ______ SCORE ______

EXAMPLE OF SCREEN OUTPUT



```
1 ·  THE SHAPE BELOW IS A :

 1) RECTANGLE
 2) SQUARE
 3) PARALLELOGRAM
 4) RHOMBUS
 5) TRAPEZOID
→6) TRIANGLE


CHOOSE A NUMBER (1-6)
```

SOFTWARE SUMMARY

Company: MECC A-738
Title: MATHEMATICS- VOL. 3
Activity: SHAPES OF POLYGONS

OBJECTIVES:

MFMT: 3.2.1 FIND PERIMETER AND AREA OF SIMPLE POLYGONS

SKILLS: MPA1 IDENTIFY A SQUARE
MPA2 IDENTIFY A RECTANGLE

ACTIVITY SUMMARY

SHAPES OF POLYGONS is a drill and practice exercise on identifying 6 basic shapes: rectangle, square, parallelogram, rhombus, trapezoid and triangle. The program displays a shape on the screen. The student is asked to select the name of that shape from a list of 6 figures. If the figure is a rhombus and a student chooses "parallelogram," the feedback will be: "Correct, but there is a better answer." The student is expected to answer the most specific name for the shape. If two incorrect choices are made, the program will indicate what the correct choice is.

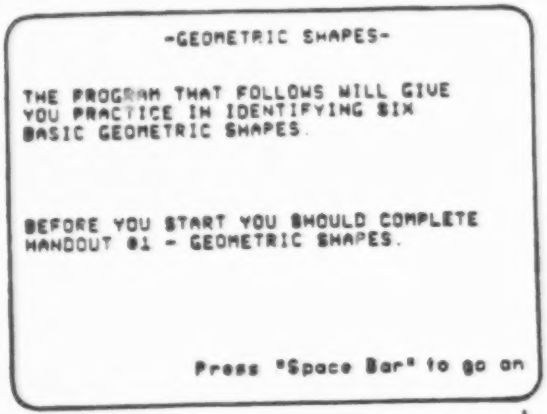
The student can ask for up to 30 questions. Handout sheet #1 from the manual is expected to be completed before using the program. Handout sheet #2 should be used after completing the program to emphasize the overlap of definitions of some shapes. The teacher should note that squares and rhombuses might appear slightly distorted, depending on the monitor used, and should note this to the students. There is no sound to the program.

TEACHER OPTIONS

There are no teacher options other than to indicate to the students how many drill problems to key in (up to 30).

SUGGESTIONS

1. Worksheet #1 from the manual should be completed before using the program and should be available during the use of the program.
2. Emphasize to students about the overlap in the classification of shapes and the use of the most specific name possible.
3. Worksheet #2 from the manual is a good follow-up to use in discussion of the classification overlapping.
4. Have students keep track of how many questions they answered correctly.
5. D.T.A. Applications:
    Warm-up
    Independent Practice
    Vocabulary: rectangle
        square
        parallelogram
        rhombus
        trapezoid
        triangle
6. See the MECC manual for further information.



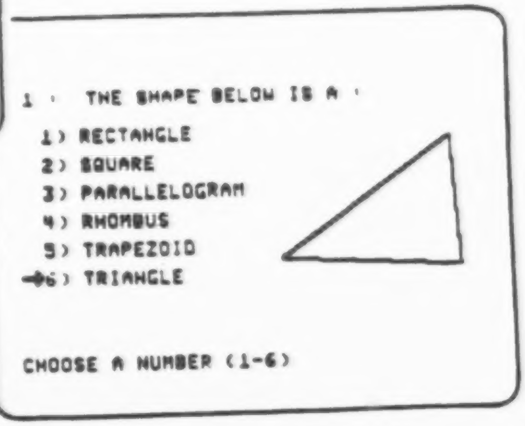
```
-GEOMETRIC SHAPES-

THE PROGRAM THAT FOLLOWS WILL GIVE
YOU PRACTICE IN IDENTIFYING SIX
BASIC GEOMETRIC SHAPES.


BEFORE YOU START YOU SHOULD COMPLETE
HANDOUT #1 - GEOMETRIC SHAPES.



                Press "Space Bar" to go on
```



```
1 ·  THE SHAPE BELOW IS A ·

  1) RECTANGLE
  2) SQUARE
  3) PARALLELOGRAM
  4) RHOMBUS
  5) TRAPEZOID
 →6) TRIANGLE


CHOOSE A NUMBER (1-6)
```

668

GEOMETRIC SHAPES

Name ____________________

TERMS

You will be calculating perimeter and area for several geometric shapes. The terms perimeter, area and geometric may be unfamiliar to you. Therefore you should read and remember the definitions shown below:

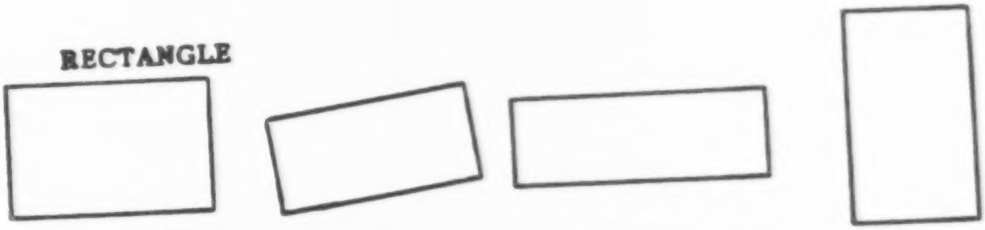
> **Perimeter** - the distance around a shape. The perimeter of the school yard is the distance you would walk if you followed the outside edge all the way around and back to where you started.
>
> **Area** - a measure of the space a flat shape occupies. The area of a garden tells you how much flat surface there is to plant. The area of a garden would usually be measured in square feet or square meters.
>
> **Geometric** - figures which are made up of straight lines, triangles, circles or other regular forms.

SHAPES

The geometric shapes you will learn about are pictured on the next several pages. Complete this handout by doing the following steps.

1. Study the group of shapes to find out what is similar between them.
2. Write a definition for the shape based on the similarities you observe.
3. Have your teacher check your definitions.
4. Run "GEOMETRIC SHAPES".
5. Revise your definitions if necessary.

RECTANGLE



Your definition: ____________________

____

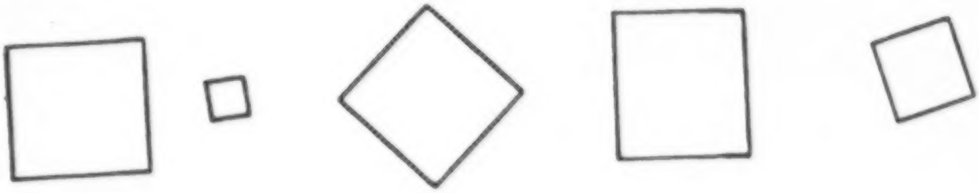
Revised definition: ____________________

____

1

GEOMETRIC SHAPES (Page 2)

SQUARE



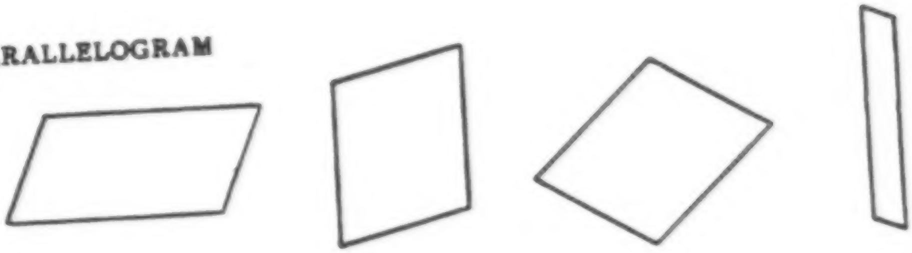
Your definition: ______________________________

____

Revised definition: ______________________________

____

PARALLELOGRAM



Your definition: ______________________________

____

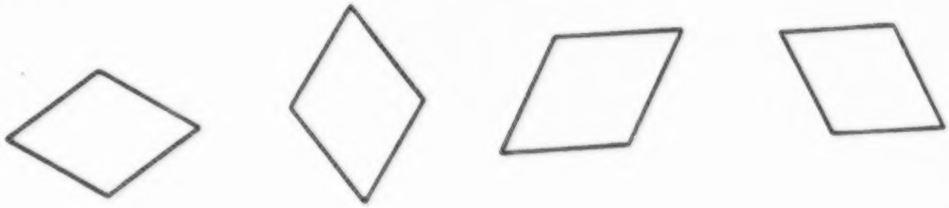
Revised definition: ______________________________

____

①

GEOMETRIC SHAPES (Page 3)

RHOMBUS



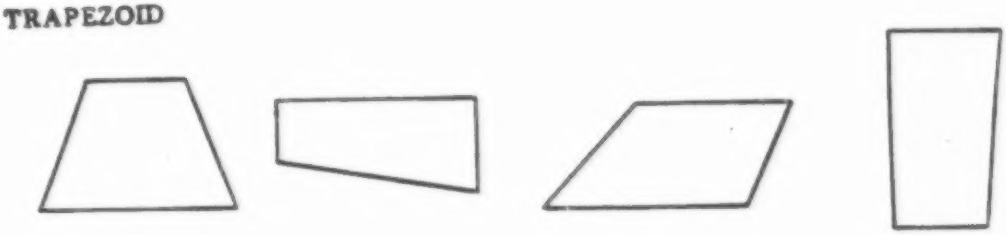
Your definition: ______________________________

____

Revised definition: ______________________________

____

TRAPEZOID



Your definition: ______________________________

____

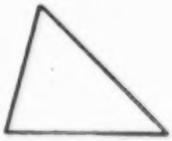
Revised definition: ______________________________

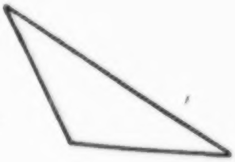
____

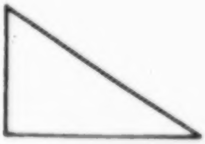
①

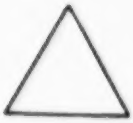
GEOMETRIC SHAPES (Page 4)

TRIANGLE









Your definition: ______________________________

____

Revised definition: ______________________________

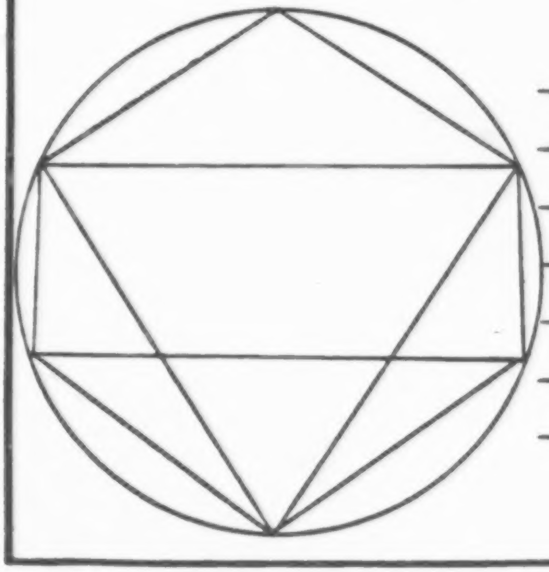
____

Have your teacher look at "your definitions". Then run "GEOMETRIC SHAPES" on the microcomputer and revise your definitions if necessary. Record your number of problems and score below:

______
Teacher
Initials

Number of problems: ______
Score: ______

After running the program, look at the design below. What shapes can you find and how many of each shape?



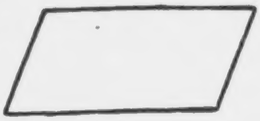
Shape	Number

2

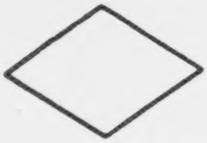
GEOMETRIC SHAPES FLOWSHEET

Name ____________________

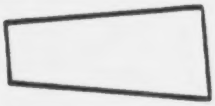
Use the flowsheet to identify the shapes shown below. The lines below each shape are numbered. Number 1. would be the name of the largest group the shape belongs to, followed by more specific names or name.



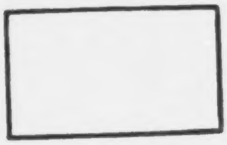
1. __________
2. __________
3. __________



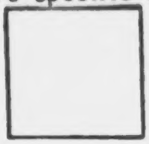
1. __________
2. __________
3. __________
4. __________



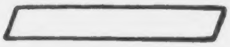
1. __________
2. __________



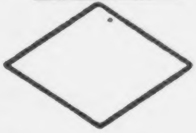
1. __________
2. __________
3. __________
4. __________



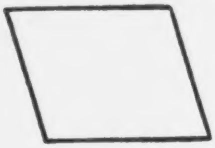
1. __________
2. __________
3. __________
4. __________
5. __________



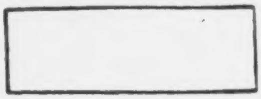
1. __________
2. __________
3. __________



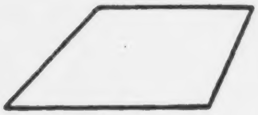
1. __________
2. __________
3. __________
4. __________



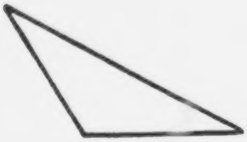
1. __________
2. __________
3. __________



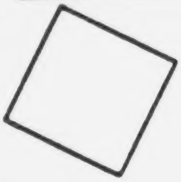
1. __________
2. __________
3. __________
4. __________



1. __________
2. __________

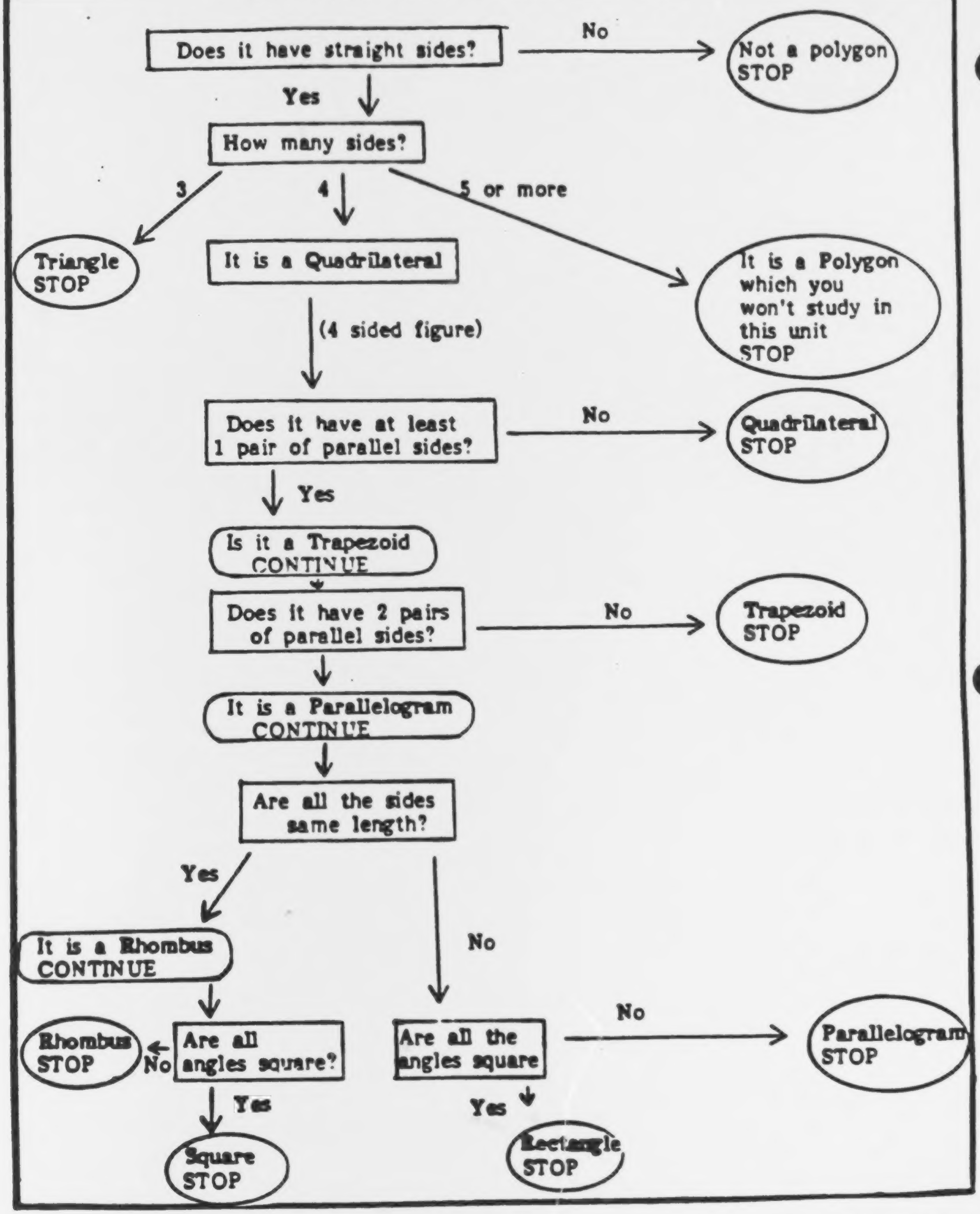


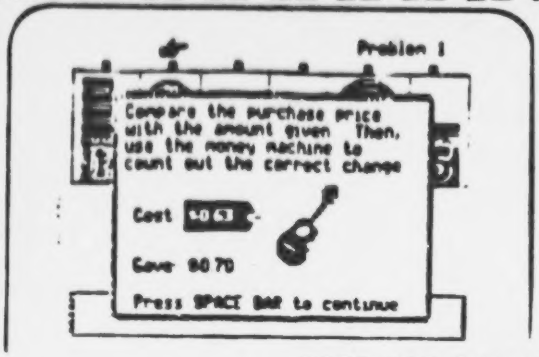
1. __________



1. __________
2. __________
3. __________
4. __________
5. __________

GEOMETRIC SHAPES FLOWSHEET (Page 2)


Does it have straight sides?
No
Not a polygon STOP
Yes
How many sides?
3
4
5 or more
Triangle STOP
It is a Quadrilateral
It is a Polygon which you won't study in this unit STOP
(4 sided figure)
Does it have at least 1 pair of parallel sides?
No
Quadrilateral STOP
Yes
Is it a Trapezoid CONTINUE
Does it have 2 pairs of parallel sides?
No
Trapezoid STOP
It is a Parallelogram CONTINUE
Are all the sides same length?
Yes
No
It is a Rhombus CONTINUE
Rhombus STOP
No
Are all angles square?
Yes
Square STOP
Are all the angles square
No
Parallelogram STOP
Yes
Rectangle STOP



Problem 1

Compare the purchase price with the amount given. Then, use the money machine to count out the correct change

Cost $0.63

Gave $0.70

Press SPACE BAR to continue

SOFTWARE SUMMARY

Company: MECC A-195
Title: MONEY WORKS
Activity: COUNT CHANGE

DOES NOT RUN ON THE APPLE II +

OBJECTIVES

MFMT: 5.1.2. Solve Money Problems Using Addition and Subtraction
5.1.5. Make Change

SKILLS: KW2 SELECT AN OPERATION FROM KEY WORDS OR PHRASES
MC1 IDENTIFY THE VALUE OF A PENNY, A NICKEL, A DIME, AND A QUARTER
MC3 CONVERT A SUM OF MONEY INTO THE FEWEST BILLS AND COINS

ACTIVITY SUMMARY

COUNTING CHANGE is an activity that gives students practice in determining the correct change, given the amount of money offered for a purchase and the cost of the purchase. The program encourages the student to use the fewest bills and coins possible.

COUNTING CHANGE first displays the purchase price for an item and the amount offered for payment. Then, the student is presented with a money changer that has a limited amount of bills and coins.

The student uses the arrow keys to move an icon of a hand to the coins that are to be selected and presses the Space Bar. Each time the space bar is pressed one coin or bill is dropped. The student continues this until the correct amount of change is counted out. The Return key is then pressed. If they counted out too much change and wish to correct it, they can press the "R" key to remove change.

For an incorrect response the program will respond in the following ways:

If amount dropped is:	Program responds:
Not enough change -	"No, you need more change"
Too much change -	"No, you need to remove some money"

For two incorrect responses the student is given the answer with the cues, "No, watch the money changer" then, "The correct change is XXXX"

For a correct answer the program responds with "Right! The correct change is XXX and a sound. An animated money bag smiles and moves.

For two incorrect responses the student is given the answer with the cues, "No, watch the money changer" then, "The correct change is XXXX"

For a correct answer the program responds with "Right! The correct change is XXX and a sound. An animated money bag smiles and moves.

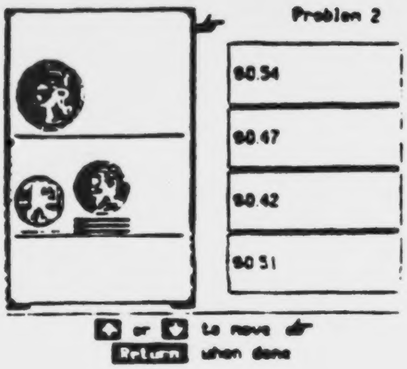
Students may experience difficulty recognizing computer images of coins or counting stacked coins. The teacher needs to monitor student responses and level of frustration.

TEACHER OPTIONS

1. Press Control-A from the main menu to access the teacher management options.
   A. Select appropriate skill level (given as a grade level 1-4 or non graded).
   B. Select the visual representation of coins and bills (heads/tails/both); set the maximum amount; and choose the money expression and currency system.
2. Press Control-S at any time to turn sound off or on.

SUGGESTIONS

1. A brief demonstration of the program and a review of the visual representation of money units may be necessary if students have difficulty with visual discrimination. The ability to change from heads to tails format may eliminate this difficulty.
2. It may be helpful to provide a chart of coins and bills and their values.
3. D.T.A. Applications:
   Warm-up
   Guided Practice
   Independent Practice
4. See the MECC manual for further information.



SOFTWARE SUMMARY

Company: MECC A-195
Title: MONEY WORKS
Activity: HOW MUCH MONEY?

DOES NOT RUN ON THE APPLE II+

OBJECTIVES:

MFMT: 5.1.5. Make Change

SKILLS: MC1 IDENTIFY THE VALUE OF A PENNY, A NICKEL, A DIME, AND A QUARTER

ACTIVITY SUMMARY

HOW MUCH MONEY? is an activity that gives students practice in coin recognition and matching the value of a collection to a written money expression.

Students are asked to count the money in a safe. They use the up and down arrow keys to move an icon of a hand to the intended position. Next, they press the Return key to select the correct matching value.

For a correct response the student hears a slight noise and sees an animated money bag. The word RIGHT appears at the bottom of the screen.

For an incorrect response the words "No, try again." appear at the bottom of the screen. Each time the student selects an incorrect answer that option is removed from the screen. The student has a total of four answers to choose from. They receive credit only when they get an answer correct on the first try.

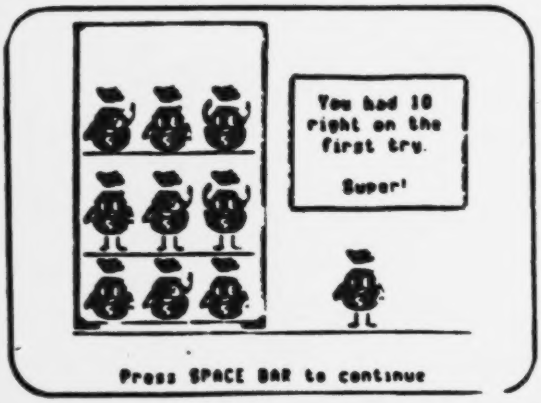
Students may have difficulty recognizing computer images of coins especially when counting stacked coins. The teacher needs to monitor student responses.

TEACHER OPTIONS

1. Press Control-A from the main menu to access the teacher managemen options.
    A. Select the appropriate skill level (given as a grade level 1-4 or nongraded).
    B. Select the visual representation of coins and bills (heads/tails/both), set the maximum amount, and choose the money expression and currency system.
2. Press Control S at any time to turn the sound off or on.

SUGGESTIONS

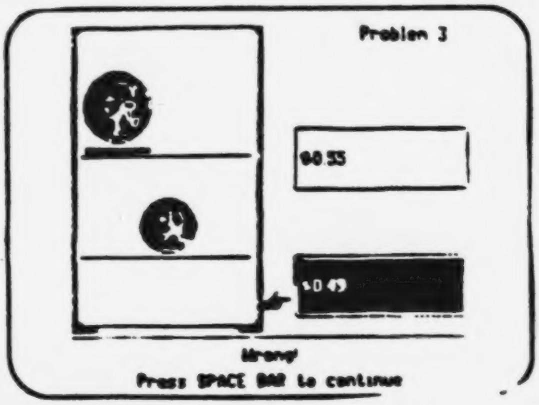
1. A brief demonstration of the program and a review of the visual representation of money units may be necessary if students have difficulty with visual discrimination. The ability to change from heads to tails format may eliminate this problem.
2. It may be helpful to provide a chart of coins and bills and their values.
3. D.T.A. Applications:
    Warm-up (if set at a simple level)
    Guided Practice
    Independent Practice
    Vocabulary: dollar(s)
        cent(s)
        remove
        amount
        money
        word
        names one through ninety
        hypenated word names twenty-one through ninety-nine
4. Look in the upper right corner of the screen to see the students problem number.
5. See the MECC manual for further information.



You had 10 right on the first try.

Super!

Press SPACE BAR to continue



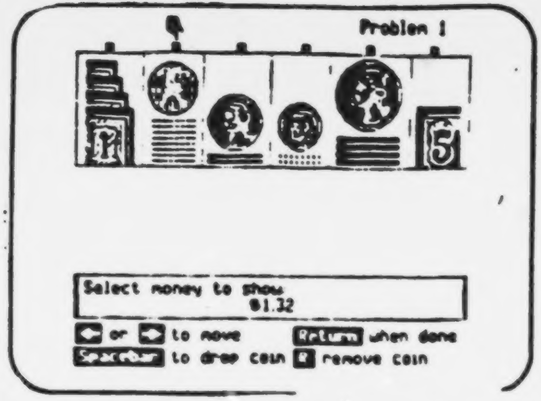
Problem 3

$0.35

$0.45

Wrong!

Press SPACE BAR to continue



Select money to show
$1.32

SOFTWARE SUMMARY

Company: MECC A-195
Title: MONEY WORKS
Activity: MONEY MACHINE

DOES NOT RUN ON THE APPLE II +

OBJECTIVES:

MFMT: 5.1.5. Make Change

SKILLS: MC1 IDENTIFY THE VALUE OF A PENNY, A NICKEL, A DIME, AND A QUARTER
MC3 CONVERT A SUM OF MONEY INTO THE FEWEST NUMBER OF BILLS AND COINS

ACTIVITY SUMMARY

MONEY MACHINE is an activity that gives students an opportunity to count money and identify the value of coins and bills.

The program gives the student a written dollar amount and the cue "Select money to show XXX". Students use the arrow keys to move an icon of a hand to the coins that are to be selected. They press the Space Bar to drop the coins. The "R" key can be used to remove coins that were selected. When they are satisfied with their selection the Return key is pressed.

For a correct answer the students see the cue "Right!, the correct answer is XXXX."

For an incorrect response the program will respond in the following ways:

If amount dropped is:	Program responds:
Not enough change -	"No, you need more change"
Too much change -	"No, you need to remove some money"

For two incorrect responses the student is given the answer with the cues, "No, watch the money changer" then, "This is the correct amount."

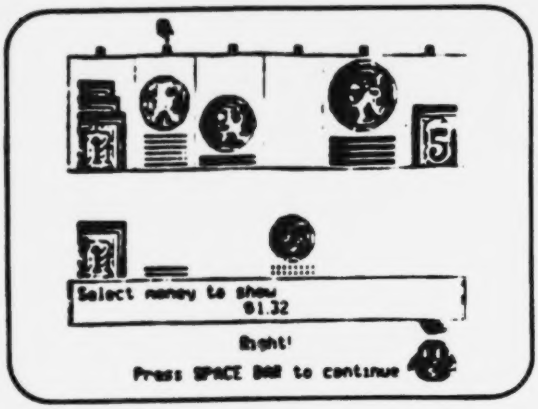
Students may experience difficulty recognizing computer images of coins or counting stacked coins. The teacher needs to monitor student responses.

TEACHER OPTIONS

1. Press Control-A from the main menu to access the teacher management options.
   A. Select the approprate skill level (given as a grade level 1-4 or nongraded).
   B. Select the visual representation of coins and bills (heads/tails/both), set the maximum amount, and choose the money expression and currency system.
2. Use the sound option on the main menu to turn sound off or on.

SUGGESTIONS

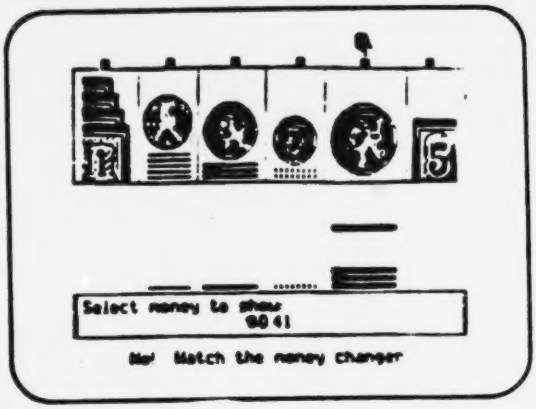
1. A brief demonstration of the program and a review of the visual representation of money units may be necessary if students have difficulty with visual discrimination. The ability to change from heads to tails format may eliminate this difficulty.
2. It may be helpful to provide a chart of coins and bills and their values.
3. D.T.A. Applications:
   Warm-up
   Guided Practice
   Independent Practice
   Vocabulary:
4. Look in the upper right corner of the screen to see the students problem number.
5. See the MECC manual for further information.



Select money to show
$1.32

Right!

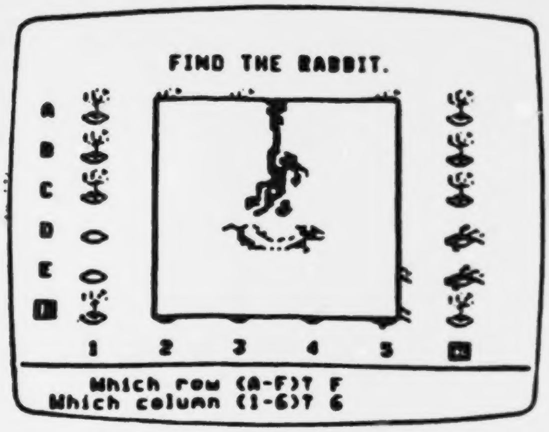
Press SPACE BAR to continue



Select money to show
$0.41

No! Watch the money changer

620



FIND THE RABBIT.

Which row (A-F)? F
Which column (1-6)? 6

SOFTWARE SUMMARY

Company: MECC A-147
Title: MULTIPLICATION PUZZLES
Activity: CARROT PATCH

OBJECTIVES:

MFMT 2.1.3 Multiply Whole Numbers
SKILLS: M4 MULTIPLY 1-DIGIT BOTTOM NUMBER TIMES 2-DIGIT TOP NUMBER, NO REGROUPING
M5 MULTIPLY 1-DIGIT BOTTOM NUMBER TIMES UP TO 4-DIGIT TOP NUMBER, NO REGROUPING

ACTIVITY SUMMARY

Multiplication Puzzles is set up so that the student does five problems and then is allowed to play a game. CARROT PATCH deals with:

multiplying a one-digit number by a two- or three-digit number with no regrouping	905 X 2
multiplying a one-digit number by a three-digit number with one regrouping.	317 X 4

Students are given two opportunities to answer a problem correctly. If they answer incorrectly on the second try, help is provided by forcing them to do the problem one step at a time. The problem must be answered correctly before proceeding to the next problem.

Students receive a score at the end of the lesson. They are congratulated if they score at or above the mastery level. The mastery level is set at 80% of 25 problems. If they score below the mastery level, they are encouraged to repeat the program.

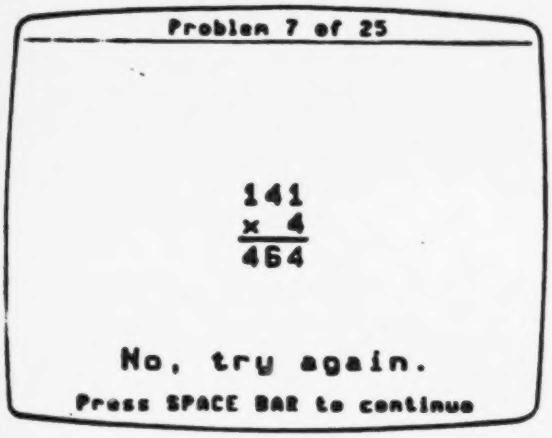
The game CARROT PATCH involves trying to track down a rabbit in the carrot patch by pulling up carrots. The rabbit moves during the game, but it will only move to an adjacent coordinate containing an uneaten carrot.

TEACHER OPTIONS

1. Number 8 from the main menu is used to turn the sound on or off.
2. Press Control-A from the main menu to access the teacher management options.
   - A. Number 1 "Turn graphics off" will remove the games from the activities so that the student is not allowed to play any games.
   - B. Number 3 "See names and scores" allows you to print student scores or view them on the screen.
   - C. Number 4 allows you to "Clear names and scores." (100 scores may be saved. After that, the oldest score is removed each time a new score is entered.)
   - D. Number 6 allows you to specify whether you want regroup, rename, or carry used in the problems. It also tells you what the current setting is.

SUGGESTIONS

1. The game CARROT PATCH requires a lot of guessing and may be frustrating to students. It takes too long to play so the teacher may want to eliminate the game by turning the graphics off in the teacher management options.
2. If the problems are too easy, press Escape twice to go on to the next activity, ZOO TRIP.
3. D.T.A Applications:
   - Warm-Up
   - Guided Practice
   - Independent Practice
   - Vocabulary: regroup, rename, carry
4. See the MECC manual for further information.

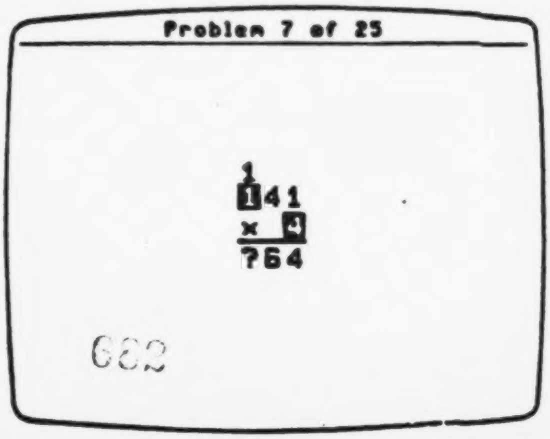


Problem 7 of 25

141
× 4
464

No, try again.

Press SPACE BAR to continue



Problem 7 of 25

1
141
× 4
?64

Desert Island
Press SPACE BAR to continue

SOFTWARE SUMMARY

Company: MECC A-147
Title: MULTIPLICATION
PUZZLES
Activity: DESERT ISLAND

OBJECTIVES:

MFMT 2.1.3 Multiply Whole Numbers
SKILLS: M2 MULTIPLY 1-DIGIT BOTTOM NUMBER TIMES 2-DIGIT TOP NUMBER, NO REGROUPING
M3 MULTIPLY 1-DIGIT BOTTOM NUMBER TIMES UP TO 4-DIGIT TOP NUMBER, NO REGROUPING

ACTIVITY SUMMARY

Multiplication Puzzles is set up so that the student does five problems and then is allowed to play a game. DESERT ISLAND deals with problems such as:

multiplying 0, 1, 10, or a multiple of 10 by a single-digit number   6 X 10 = ___   83 X 0

multiplying a single-digit number by a two- or three-digit number with no regrouping   21 X 4

Students are given two opportunities to answer a problem correctly. If they answer incorrectly on the second try, the student is taken through the problem one step at a time. In typing answers such as 72, the student must work from the right to the left and type the 2 first which is opposite the way one would write it. The problem must be answered correctly before proceeding to the next problem.

Students receive a score at the end of the lesson. They are congratulated if they score at or above the mastery level. The mastery level is set at 80% of 25 problems. If they score below the mastery level, they are encouraged to repeat the program.

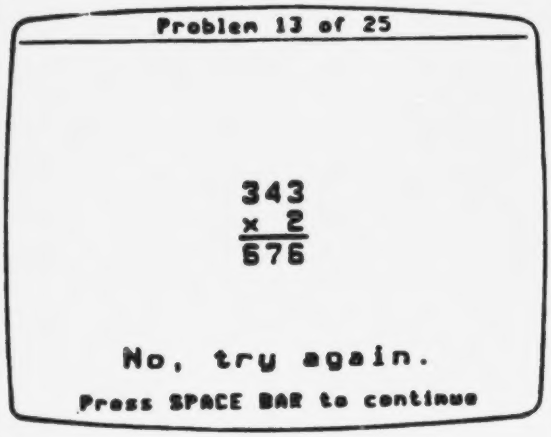
The object of the game DESEPT ISLAND is for the student to estimate where along a given number line a raft should be dropped from a plane so that an escape can be made from a desert island.

TEACHER OPTIONS

1. Number 8 from the main menu is used to turn the sound on or off.
2. Press Control-A from the main menu to access the teacher management options.
   - A. Number 1 "Turn graphics off" will remove the games from the activities so that the student is not allowed to play any games.
   - B. Number 3 "See names and scores" allows you to print student scores or view them on the screen.
   - C. Number 4 allows you to "Clear names and scores." (100 scores may be saved. After that, the oldest score is removed each time a new score is entered.)

SUGGESTIONS

1. If DESERT ISLAND takes too long to play, the teacher may want to eliminate the game by turning off the graphics in the teacher management options.
2. If the student gets the first ten problems correct, press Escape twice to go on to the next activity, CARROT PATCH.
3. D.T.A Applications:
   - Warm-Up
   - Guided Practice
   - Independent Practice
   - Vocabulary: none
4. See the MECC manual for further information.

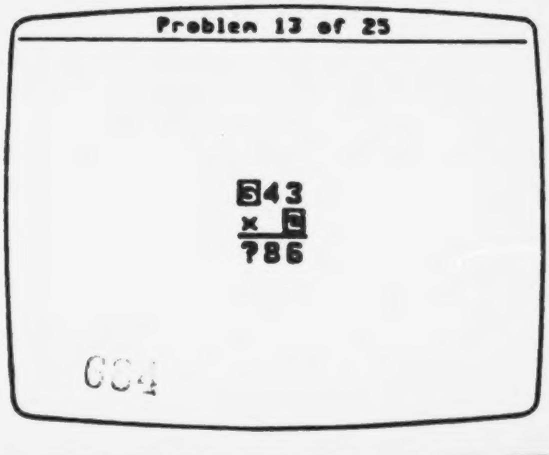


Problem 13 of 25

343
x 2
676

No, try again.

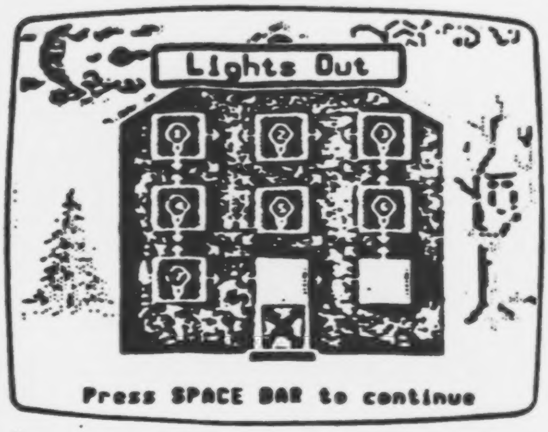
Press SPACE BAR to continue



Problem 13 of 25

343
x 2
?86

604



SOFTWARE SUMMARY

Company: MECC A-147
Title: MULTIPLICATION
PUZZLES
Activity: LIGHTS OUT

OBJECTIVES:

MFMT 2.1.3 Multiply Whole Numbers
SKILL: M1 RECALL MULTIPLICATION NUMBER FACTS

ACTIVITY SUMMARY

Multiplication Puzzles is set up so that the student does five problems and then is allowed to play a game. LIGHTS OUT deals with problems such as:

multiplication facts with factors from 2 to 5 — 2 X 5 = ___

multiplying 0 or 1 by a single-digit number — 1 X 6 = ___ — 7 X 0

Students are given two opportunities to answer a problem correctly. If they answer incorrectly on the second try, the student is given a graphic representation of the problem and told to think in groups or he is given basic multiplication rules that cover the problem:

Any number times one is the same number.
Any number times zero is zero.

The problem must be answered correctly before proceeding to the next problem.

Students receive a score at the end of the lesson. They are congratulated if they score at or above the mastery level. The mastery level is set at 80% of 25 problems. If they score below the mastery level, they are encouraged to repeat the program.

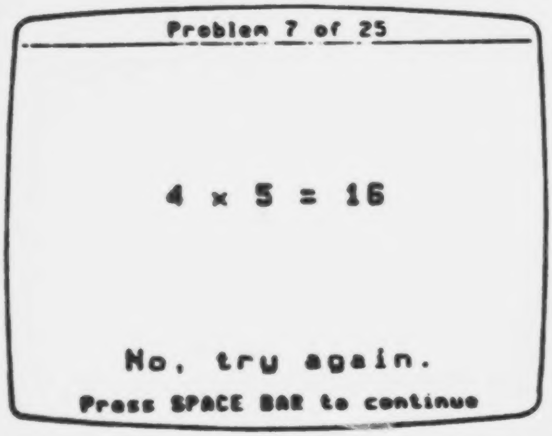
The object of the game LIGHTS OUT is to try to turn off the lights using the switches shown within 25 tries. When any light is turned off, the light switches in the adjoining rooms, pointed at by the arrows, are also switched.

TEACHER OPTIONS

1. Number 8 from the main menu is used to turn the sound on or off.
2. Press Control-A from the main menu to access the teacher management options.
    A. Number 1 "Turn graphics off" will remove the games from the activities so that the student is not allowed to play any games.
    B. Number 3 "See names and scores" allows you to print student scores or view them on the screen.
    C. Number 4 allows you to "Clear names and scores." (100 scores may be saved. After that, the oldest score is removed each time a new score is entered.)

SUGGESTIONS

1. The game LIGHTS OUT is very difficult and time-consuming. We recommend that the teacher turn the graphics off in the teacher management options so the game is eliminated.
2. If the problems are too easy for the student, press Escape twice to go on to the next activity, PAPER, ROCK, SCISSORS.
3. D.T.A Applications:
    Warm-Up
    Guided Practice
    Independent Practice
    Vocabulary: none
4. See the MECC manual for further information.

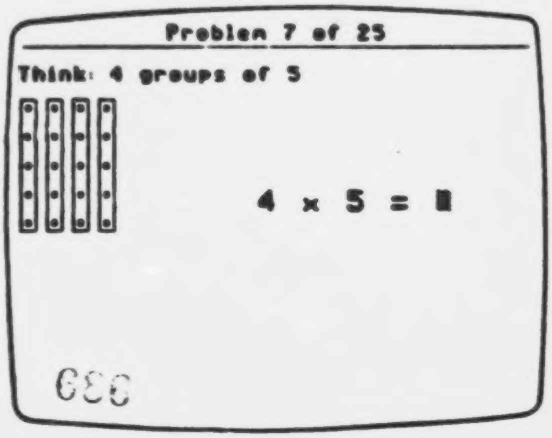


Problem 7 of 25

4 x 5 = 16

No, try again.

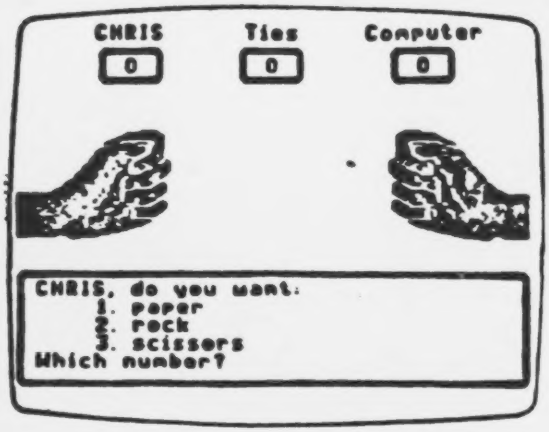
Press SPACE BAR to continue



Problem 7 of 25

Think: 4 groups of 5

4 x 5 = ▮



```
CHRIS, do you want:
     1. paper
     2. rock
     3. scissors
Which number?
```

SOFTWARE SUMMARY

Company: MECC A-147
Title: MULTIPLICATION
       PUZZLES
Activity: PAPER, ROCK,
          SCISSORS

OBJECTIVES:

MFMT 2.1.3 Multiply Whole Numbers
SKILL: M1 RECALL MULTIPLICATION NUMBER FACTS

ACTIVITY SUMMARY

Multiplication Puzzles is set up so that the student does five problems and then is allowed to play a game. PAPER, ROCK, SCISSORS deals with problems such as:

multiplication facts with factors from 2 to 5	2 X 5 = ___
multiplication facts with at least one factor greater or equal to 6	9 X 3 = ___

Students are given two opportunities to answer a problem correctly. If they answer incorrectly on the second try, the student is given a graphic representation of the problem and told to think in groups. He could count the small squares on the screen to get the answer, but that would be rather difficult when the answer is more than ten. The problem must be answered correctly before proceeding to the next problem.

Students receive a score at the end of the lesson. They are congratulated if they score at or above the mastery level. The mastery level is set at 80% of 25 problems. If they score below the mastery level, they are encouraged to repeat the program.

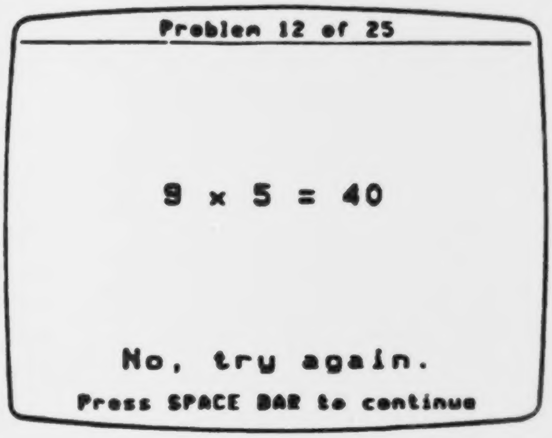
The object of the game PAPER, ROCK, SCISSORS is to outguess your opponent, the computer.

TEACHER OPTIONS

1. Number 8 from the main menu is used to turn the sound on or off.
2. Press Control-A from the main menu to access the teacher management options.
   - A. Number 1 "Turn graphics off" will remove the games from the activities so that the student is not allowed to play any games.
   - B. Number 3 "See names and scores" allows you to print student scores or view them on the screen.
   - C. Number 4 allows you to "Clear names and scores." (100 scores may be saved. After that, the oldest score is removed each time a new score is entered.)

SUGGESTIONS

1. The game PAPER, ROCK, SCISSORS takes approximately 30 seconds to play and is very motivational. It does not interfere with the time spent on the drill. However, if the teacher wishes to eliminate the game, turn the graphics off in the teacher management options.
2. If the student gets the first ten problems correct, press Escape twice to go on to the next activity, CARROT PATCH.
3. D.T.A Applications:
   - Warm-Up
   - Guided Practice
   - Independent Practice
   - Vocabulary: none
4. See the MECC manual for further information.

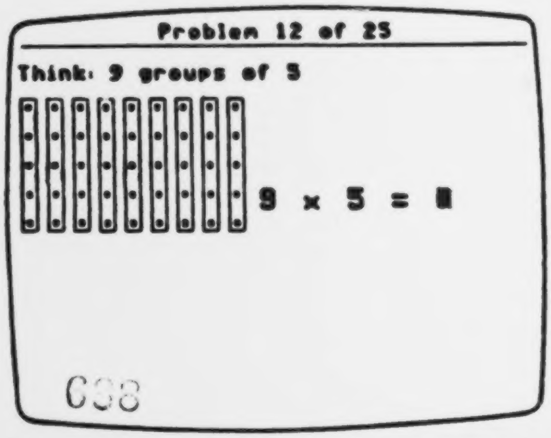


Problem 12 of 25

9 x 5 = 40

No, try again.

Press SPACE BAR to continue

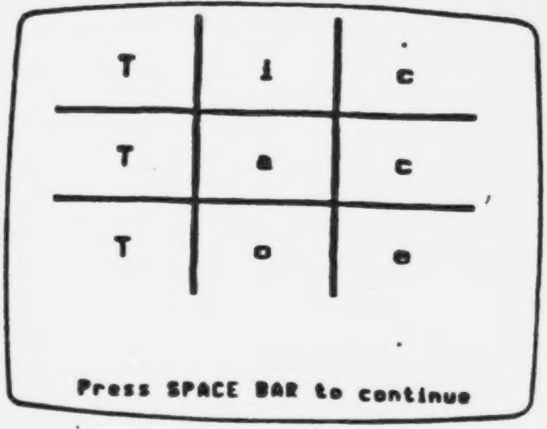


Problem 12 of 25

Think: 9 groups of 5

9 x 5 = ■

038



SOFTWARE SUMMARY

Company: MECC A-147
Title: MULTIPLICATION
PUZZLES
Activity: TIC-TAC-TOE

OBJECTIVES:

MFMT 2.1.3 Multiply Whole Numbers
SKILL: M1 RECALL MULTIPLICATION NUMBER FACTS

ACTIVITY SUMMARY

Multiplication Puzzles is set up so that the student does five problems and then is allowed to play a game. TIC-TAC-TOE deals with problems such as:

multiplication facts with factors from 2 to 5	2 X 5 = ___
multiplication facts with at least one factor greater or equal to 6	9 X 3 = ___
providing missing factors to multiplication facts	4 X ___ = 32

Students are given two opportunities to answer a problem correctly. If they answer incorrectly on the second try, the student is given a graphic representation of the problem and told to think in groups. He could count the small squares on the screen to get the answer, but that would be rather difficult when the answer is more than ten. It is much easier to use the graphic help when the answser is a missing factor. The problem must be answered correctly before proceeding to the next problem.

Students receive a score at the end of the lesson. They are congratulated if they score at or above the mastery level. The mastery level is set at 80% of 25 problems. If they score below the mastery level, they are encouraged to repeat the program.

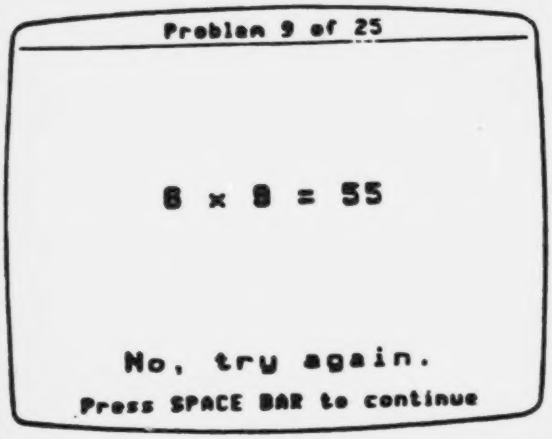
The object of the game TIC-TAC-TOE is to get three markers in a row before the computer does. The difficulty level of the game can be adjusted in the teacher management options.

TEACHER OPTIONS

1. Number 8 from the main menu is used to turn the sound on or off.
2. Press Control-A from the main menu to access the teacher management options.
   - A. Number 1 "Turn graphics off" will remove the games from the activities so that the student is not allowed to play any games.
   - B. Number 3 "See names and scores" allows you to print student scores or view them on the screen.
   - C. Number 4 allows you to "Clear names and scores." (100 scores may be saved. After that, the oldest score is removed each time a new score is entered.)
   - D. Number 6 "Set level for TIC-TAC-TOE" allows you to adjust the difficulty of the game to easy, medium, or hard. It also tells you the current setting.

SUGGESTIONS

1. The game TIC-TAC-TOE takes approximately 50 seconds to play and is very motivational. If the teacher wishes to eliminate the game, turn the graphics off in the teacher management options.
2. If the student gets the first ten problems correct, press Escape twice to go on to the next activity, DESERT ISLAND.
3. D.T.A Applications:
   - Warm-Up
   - Guided Practice
   - Independent Practice
   - Vocabulary: none
4. See the MECC manual for further information.

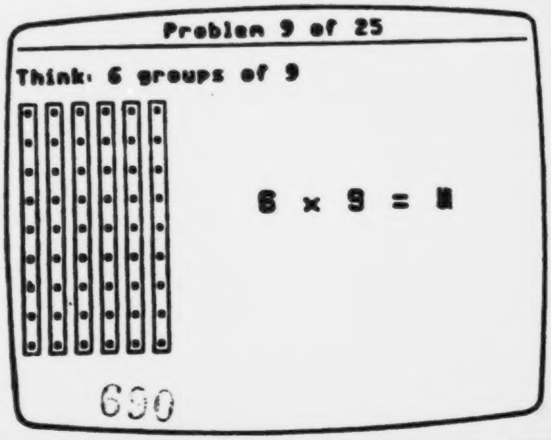


Problem 9 of 25

6 × 9 = 55

No, try again.

Press SPACE BAR to continue

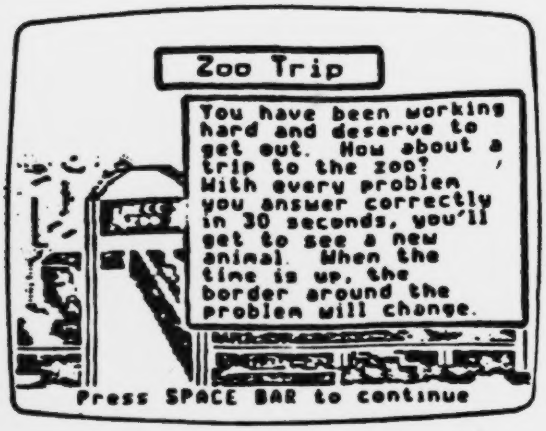


Problem 9 of 25

Think: 6 groups of 9

6 × 9 = ■

690



You have been working hard and deserve to get out. How about a trip to the zoo? With every problem you answer correctly in 30 seconds, you'll get to see a new animal. When the time is up, the border around the problem will change.

SOFTWARE SUMMARY

Company: MECC A-147
Title: MULTIPLICATION
PUZZLES
Activity: ZOO TRIP

OBJECTIVES:

MFMT 2.1.3 Multiply Whole Numbers
SKILLS: M1 RECALL MULTIPLICATION NUMBER FACTS
M2 MULTIPLY 1-DIGIT BOTTOM NUMBER TIMES 2-DIGIT TOP NUMBER, NO REGROUPING
M3 MULTIPLY 1-DIGIT BOTTOM NUMBER TIMES UP TO 4-DIGIT TOP NUMBER, NO REGROUPING
M4 MULTIPLY 1-DIGIT BOTTOM NUMBER TIMES 2-DIGIT TOP NUMBER, REGROUPING
M5 MULTIPLY 1-DIGIT BOTTOM NUMBER TIMES UP TO 3 OR 4-DIGIT TOP NUMBER, REGROUPING

ACTIVITY SUMMARY

ZOO TRIP is a review of all the activities in Multiplication Puzzles in a timed drill format. Graphic reinforcement is provided by a trip to the zoo. The amount of time allowed to complete each problem can be set in the teacher management options. If the graphics are turned off, the drill in not timed.

Twenty-five randomly generated review problems are presented. Students are given as many chances as needed to answer a problem correctly within the time allotted. If they answer incorrectly after the allotted time has run out, help is provided. The problem must be answered correctly before proceeding to the next problem.

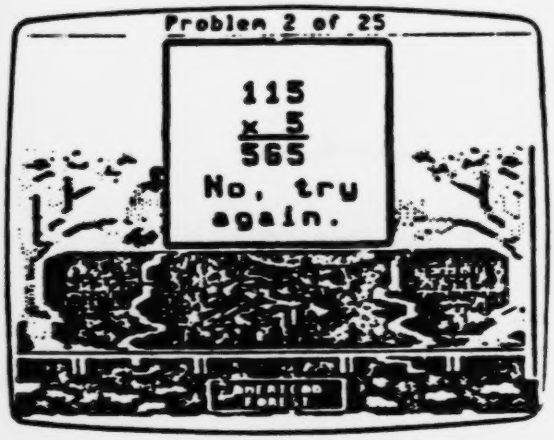
Students receive a score at the end of the lesson. They are congratulated if they score at or above the mastery level. The mastery level is set at 80% of 25 problems. If they score below the mastery level, they are encouraged to repeat the program.

TEACHER OPTIONS

1. Number 8 from the main menu is used to turn the sound on or off.
2. Press Control-A from the main menu to access the teacher management options.
   A. Number 1 "Turn graphics off" will remove the games from the activities so that the student is not allowed to play any games.
   B. Number 2 "Set review time" allows you to change the amount of time for completing each problem from a minimum of 2 seconds to a maximum of 255 seconds. The default setting is 30 seconds.
   C. Number 3 "See names and scores" allows you to print student scores or view them on the screen.
   D. Number 4 allows you to "Clear names and scores." (100 scores may be saved. After that, the oldest score is removed each time a new score is entered.)
   E. Number 6 allows you to specify whether you want regroup, rename, or carry used in the problems. It also tells you what the current setting is.

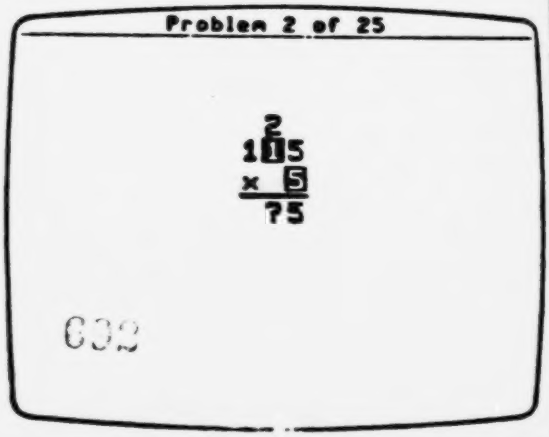
SUGGESTIONS

1. The teacher will have to use his/her own judgement as to the appropriate timing for this review drill.
2. D.T.A Applications:
   - Warm-Up
   - Guided Practice
   - Independent Practice
   - Vocabulary: regroup, rename, carry
3. See the MECC manual for further information.



Problem 2 of 25

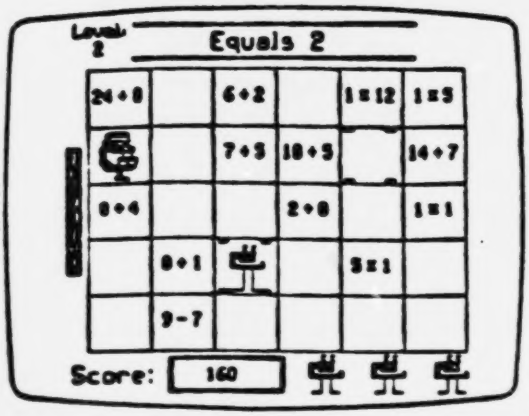
115
x 5
565
No, try again.



Problem 2 of 25

2
115
x 5
?5

632



SOFTWARE SUMMARY

Company: MECC A-170
Title: Number Munchers
Activity: EQUALITY

OBJECTIVES:

MFMT 2.1.1, 2.1.2 Add Whole Numbers and Subtract Whole Numbers
SKILL: A1 RECALL ADDITION NUMBER FACTS
S1 RECALL SUBTRACTION NUMBER FACTS

ACTIVITY SUMMARY

This game is similar to Pac Man. The student is given a number in the statement "Equals ____ ". The student must maneuver the "Muncher" using all four arrow keys (or a joystick if one is connected) in a 5X6 grid with 30 squares containing equations. He must then press the space bar to "munch" those equations that have an answer that equals the number given at the top. Certain squares are indicated as safe from the troggles which try to catch the muncher. Beeps tell the student when the safe squares are changed. Four notes also announce the arrival of a troggle onto the game board. As the student progresses from game to game, more troggles appear, and they do not always move in straight lines as at the beginning. The student may press "?" to stop the game if he wishes. If he does, he loses points but can continue to play. An entirely new session must be started once all four "munchers" have been lost. A muncher can be lost either by having a troggle eat it or by getting a wrong answer.

Sound is used as feedback. It announces wrong answers, right answers, and a game successfully completed. Wrong answer feedback is a negative sound and a statement telling the student that the munched equation does not equal the given number.

Ex. Look again! 4-2 is not equal to 1.
Press Space Bar to continue.

The score is shown at the bottom. Once a student does a couple of games correctly, he is given a cute graphic of "Great Moments in Muncher History "where the muncher is a winner and the troggle is a loser. He may also be put in the Muncher Hall of Fame if his score is among the 10 top scores for that activity.

TEACHER OPTIONS

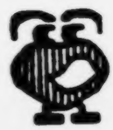
1. Press Control-S to turn the sound "on" or "off".
2. Press Control-A from the main menu to access the teacher management options.
   - A. Select the activity of "Equality" by pressing the Return key down once to see "yes" under the "Use" category. The same can be done to turn "off" this activity, just press Return to see "no" in the "Use" category. The highlighted box should be on the word "yes" or "no" in this category, if teacher was just in the game. If not the highlighted box is moved by using the arrow keys.
   - B. Select the range of numbers by using the arrow key to move the highlighted box to the "Range" category. Then press Return. The allowable range of numbers used in this activity is 1-50. The teacher follows the screen directions by entering in the lower limit and the upper limit.
   - C. Select either "random" or "in order" for the "Sequence" category. Do this by moving the highlighted box to that category and pressing return. This will allow the numbers that were selected in the range category to be presented in order or randomly.
   - D. Select the operations that will be used by moving the highlighted box under the "Other" category. Press Return and enter the selections by following the sceens directions. In this activity it means pressing the arrow keys and the Return key to turn the operations "on" or "off."

Note Descriptions of the categories are available if the Teacher presses the "?" key when the highlighted box is on the category in question.

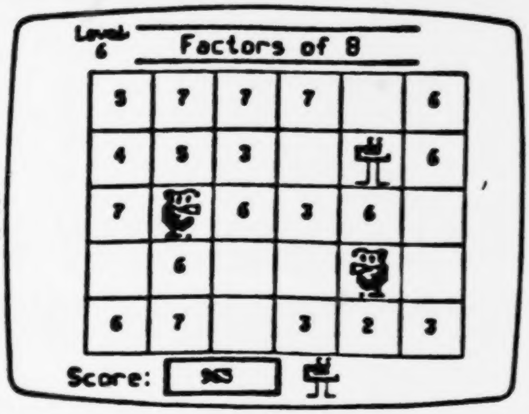
SUGGESTIONS

1. Listen for sound to hear if the student is progressing and getting correct answers.
2. Leave the sound "on" if it does not distract other students. Sound is an important part of the game and the feedback and lets the student know what is happening that he might not otherwise notice.
3. D.T.A. Applications:
   Warm-up
   Independent Practice
   Vocabulary: Equals
4. See the MECC manual for further information.

Helpers
(Trogglus assistus)



Helpers behave in a manner similar to Reggies except that if they enter cells containing a number or expression, they will eat them but not leave any in their place. Unlike Reggies, Helpers move in random directions.



5	7	7	7		6
4	5	3			6
7		6	3	6	
	6				
6	7		3	2	3

SOFTWARE SUMMARY

Company: MECC A-170
Title: NUMBER MUNCHERS
Activity: FACTORS

OBJECTIVES:

MFMT 2.1.3 Multiply Whole Numbers
SKILLS: M1 RECALL MULTIPLICATION NUMBER FACTS

ACTIVITY SUMMARY

This game is similar to Pac Man. The student is given a number in the statement "Factors of ____ ". The student must maneuver the "Muncher" using all four arrow keys (or a joystick if one is connected) in a 5X6 grid with 30 squares containing other numbers. He must then press the space bar to "munch" those numbers that are factors of the one given at the top. Certain squares are indicated as safe from the troggles which try to catch the muncher. Beeps tell the student when the safe squares are changed. Four notes also announce the arrival of a troggle onto the game board. As the student progresses from game to game, more troggles appear, and they do not always move in straight lines as at the beginning. The student may press "?" to stop the game if he wishes. If he does, he loses points but can continue to play. An entirely new session must be started once all four "munchers" have been lost. A muncher can be lost either by having a troggle eat it or by getting a wrong answer.

Sound is used as feedback. It announces wrong answers, right answers, and a game successfully completed. Wrong answer feedback is a negative sound and a statement telling the student that the munched number is not a factor of the given one.

Ex. Look again!! 2 is not a factor of 3.
Press Space Bar to continue.

The score is shown at the bottom. Once a student does a couple of games correctly, he is given a cute graphic of "Great Moments in Muncher History" where the muncher is a winner and the troggle is a loser. He may also be put in the Muncher Hall of Fame if his score is among the 10 top scores for that activity.

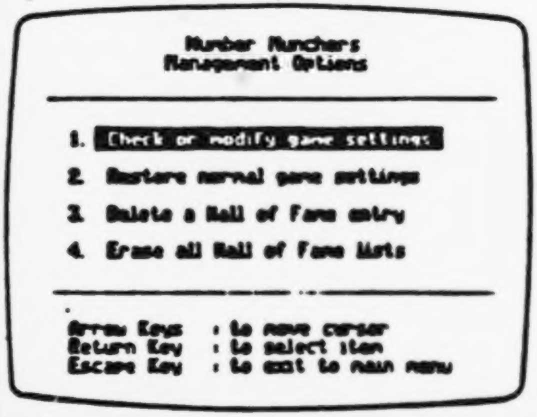
TEACHER OPTIONS

1. Press Control-S to turn the sound "on" or "off."
2. Press Control-A from the main menu to access the teacher management options.
   A. Select the activity of "Factors" by pressing the Return key down once to see "yes" under the "Use" category. The same can be done to turn off this activity, just press Return to see "no" in the "Use" category. The highlighted box should be on the word "yes" or "no" in this category, if teacher was just in the game. If not the highlighted box is moved by using the arrow keys.
   B. Select the range of numbers by using the arrow key to move the highlighted box to the "Range" category. Then press Return. The allowable range of numbers used in this activity is 3-99. The teacher follows the screen directions by entering in the lower limit and the upper limit.
   C. Select either "random" or "in order" for the "Sequence" category. Do this by moving the highlighted box to that category and pressing Return. This will allow the numbers that were selected in the range category to be presented in order or randomly.

Note Descriptions of the categories are available if the Teacher presses the "?" key when the highlighted box is on the category in question.

SUGGESTIONS

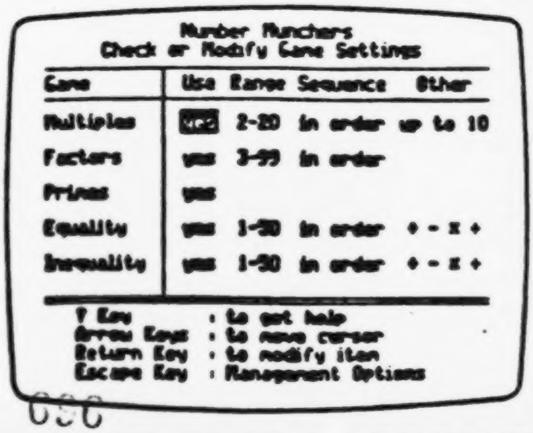
1. Listen for sound to hear if the student is progressing and getting correct answers.
2. Leave the sound "on" if it does not distract other students. Sound is an important part of the game and the feedback and lets the student know what is happening that he might not otherwise notice.
3. D.T.A. Applications:
   Warm-up
   Independent Practice
   Vocabulary: Factors



Number Munchers
Management Options

1. Check or modify game settings
2. Restore normal game settings
3. Delete a Hall of Fame entry
4. Erase all Hall of Fame lists

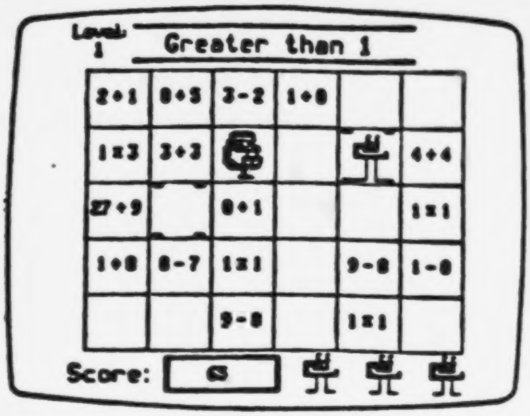
Arrow Keys : to move cursor
Return Key : to select item
Escape Key : to exit to main menu



Number Munchers
Check or Modify Game Settings

Game	Use	Range	Sequence	Other
Multiples	yes	2-20	in order	up to 10
Factors	yes	3-99	in order	
Primes	yes			
Equality	yes	1-20	in order	+ - x ÷
Inequality	yes	1-20	in order	+ - x ÷

? Key : to get help
Arrow Keys : to move cursor
Return Key : to modify item
Escape Key : Management Options



2+1	0+3	3-2	1+0		
1x3	3+3				4+4
27+9		0+1			1x1
1+0	8-7	1x1		9-8	1-0
		9-8		1x1	

SOFTWARE SUMMARY

Company: MECC A-170
Title: Number Munchers
Activity: INEQUALITY

OBJECTIVES:

MFMT 2.1.1, 2.1.2 Add Whole Numbers and Subtract Whole Numbers
SKILL: A1 RECALL ADDITION NUMBER FACTS
S1 RECALL SUBTRACTION NUMBER FACTS

ACTIVITY SUMMARY

This game is similar to Pac Man. The student is given a number in the statement "Greater than ____ ", "Less than ____" or "Not equal to _____". The student must maneuver the "Muncher" using all four arrow keys (or a joystick if one is connected) in a 5X6 grid with 30 squares containing equations. He must then press the space bar to "munch" those equations that have an answer that is "greater than", "less than" or "not equal to the number given at the top. Certain squares are indicated as safe from the troggles which try to catch the muncher. Beeps tell the student when the safe squares are changed. Four notes also announce the arrival of a troggle onto the game board. As the student progresses from game to game, more troggles appear, and they do not always move in straight lines as at the beginning. The student may press "?" to stop the game if he wishes. If he does, he loses points but can continue to play. An entirely new session must be started once all four "munchers" have been lost. A muncher can be lost either by having a troggle eat it or by getting a wrong answer.

Sound is used as feedback. It announces wrong answers, right answers, and a game successfully completed. Wrong answer feedback is a negative sound and a statement telling the student that the munched equation that is incorrect.

Ex. Oops! 0 + 1 is equal to 1.
Press Space Bar to continue.

The score is shown at the bottom. Once a student does a couple of games correctly, he is given a cute graphic of "Great Moments in Muncher History "where the muncher is a winner and the troggle is a loser. He may also be put in the Muncher Hall of Fame if his score is among the 10 top scores for that activity.

TEACHER OPTIONS

1. Press Control-S to turn the sound on or off.
2. Press Control-A from the main menu to access the teacher management options.
   A. Select the activity of "Inequality" by pressing the return key down once to see "yes" under the "Use" category. The same can be done to turn off this activity, just press return to see "no" in the "Use" category. The highlighted box should be on the word "yes" or "no" in this category, if teacher was just in the game. If not the highlighted box is moved by using the arrow keys.
   B. Select the range of numbers by using the arrow key to move the highlighted box to the "Range" category. Then press return. The allowable range of numbers used in this activity is 1-50. The teacher follows the screen directions by entering in the lower limit and the upper limit.
   C. Select either "random" or "in order" for the "Sequence" category. Do this by moving the highlighted box to that category and pressing return. This will allow the numbers that were selected in the range category to be presented in order or randomly.
   D. Select the operations that will be used by moving the highlighted box under the "Other" category. Press return and enter the selections by following the screen directions. In this activity it means pressing the arrow keys and the return key to turn the operations on or off.

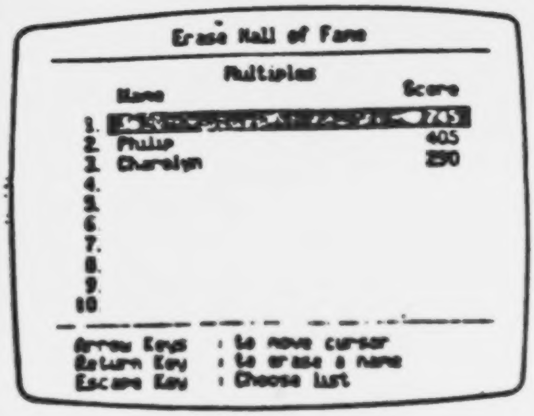
Note Descriptions of the categories are available if the Teacher presses the "?" key when the highlighted box is on the category in question.

SUGGESTIONS

1. Listen for sound to hear if the student is progressing and getting correct answers.
2. Leave the sound on if it does not distract other students. Sound is an important part of the game and the feedback and lets the student know what is happening that he might not otherwise notice.
3. D.T.A. Applications:
   Warm-up
   Independent Practice
   Vocabulary: Equals
4. See the MECC manual for further information.

Reggies
(Trogglus normalus)

Reggies are the most common species of Troggle. The creatures travel in straight lines. When Reggies enter cells containing a number or expression, they eat them and leave another (target or distractor) in their place.



```
            Erase Hall of Fame
                Multiples
      Name                               Score
  1.  [illegible]                          745
  2.  Philip                               405
  3.  Charolyn                             290
  4.
  5.
  6.
  7.
  8.
  9.
  10
  Arrow Keys   : to move cursor
  Return Key   : to erase a name
  Escape Key   : Choose list
```

SOFTWARE SUMMARY

Company: MECC A-170
Title: Number Munchers
Activity: MULTIPLES

OBJECTIVES:
MFMT 2.1.3 MULTIPLY WHOLE NUMBERS
SKILL: M1 RECALL MULTIPLICATION NUMBER FACTS

ACTIVITY SUMMARY

This game is similar to Pac Man. The student is given a number in the statement "Multiples of ____ ". The student must maneuver the "Muncher" using all four arrow keys (or a joystick if one is connected) in a 5X6 grid with 30 squares containing other numbers. He must then press the Space Bar to "munch" those numbers that are multiples of the one given at the top. Certain squares are indicated as safe from the "Troggles" which try to catch the muncher. Beeps tell the student when the safe squares are changed. Four notes also announce the arrival of a "Troggle" onto the game board. As the student progresses from game to game, more "Troggles" appear, and they do not always move in straight lines as at the beginning. The student may press "?" to stop the game if he wishes. If he does, he loses points but can continue to play. An entirely new session must be started once all four "munchers" have been lost. A muncher can be lost either by having a "Troggle" eat it or by getting a wrong answer.

Sound is used as feedback. It announces wrong answers, right answers, and a game successfully completed. Wrong answer feedback is a negative sound and a statement telling the student that the munched number is not a multiple of the given one.

Ex. Oops' 48 is not a multiple of 13.
Press Space Bar to continue.

The score is shown at the bottom. Once a student does a couple of games correctly, he is given a cute graphic of "Great Moments in Muncher History "where the muncher is a winner and the "Troggle" is a loser. He may also be put in the Muncher Hall of Fame if his score is among the 10 top scores for that activity.

TEACHER OPTIONS

1. Press Control-S to turn the sound "on" or "off" at any point in the program.
2. Press Control-A from the main menu to access the teacher management options.
   A. Select the activity of Multiples by pressing the Return key down once to see "yes" under the "Use" category. The same can be done to turn "off" this activity, press Return to see "no" in the "Use" category.
   B. Select the range of numbers by using the arrow key to move the highlighted box to the "Range" category. Then press Return. The allowable range of numbers used in this activity is 2-20. The teacher follows the screen directions by entering in the lower limit and the upper limit.
   C. Select either "random" or "in order" for the "Sequence" category. Do this by moving the highlighted box to that category and pressing return. This will allow the numbers that were selected in the range category to be presented in order or randomly.
   D. Select the multiples of the key values by moving the highlighted box under the "Other" category. Press return and enter the number by following the screen directions.

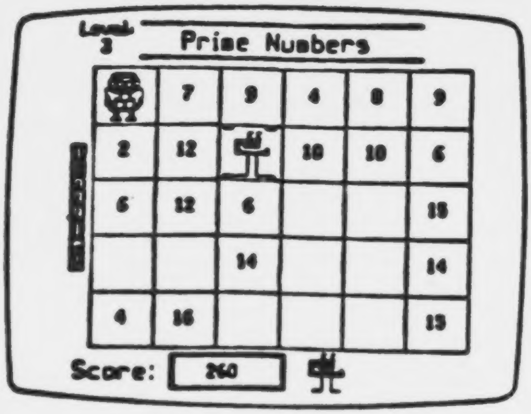
Note Descriptions of the categories are available if the Teacher presses the "?" key when the highlighted box is on the category in question.

SUGGESTIONS

1. Listen for sound to hear if the student is progressing and getting correct answers.
2. Leave the sound "on" if it does not distract other students. Sound is an important part of the game and the feedback and lets the student know what is happening that he might not otherwise notice.
3. D.T.A. Applications:
   Warm-up
   Independent Practice
   Vocabulary: Multiples
4. See the MECC manual for further information.

Smarties
(Trogglius smarticus)

Smarties travel in an unpredictable pattern until they get close to the Muncher and then they will "home in" on the Muncher and attempt to catch it. They have no effect on the contents of a cell.



	7	9	4	8	9
2	12		10	10	6
6	12	6			18
		14			14
4	16				13

SOFTWARE SUMMARY

Company: MECC A-170
Title: Number Munchers
Activity: PRIMES

OBJECTIVES:

MFMT 2.1.3 MULTIPLY WHOLE NUMBERS
SKILL: NOT REQUIRED ON THE MFMT

ACTIVITY SUMMARY

This game is similar to Pac Man. The student is given the statement "Prime Numbers." The student must maneuver the "Muncher" using all four arrow keys (or a joystick if one is connected) in a 5X6 grid with 30 squares containing other numbers. He must then press the space bar to "munch" those numbers that are prime numbers. Certain squares are indicated as safe from the troggles which try to catch the muncher. Beeps tell the student when the safe squares are changed. Four notes also announce the arrival of a troggle onto the game board. As the student progresses from game to game, more troggles appear, and they do not always move in straight lines as at the beginning. The student may press "?" to stop the game if he wishes. If he does, he loses points but can continue to play. An entirely new session must be started once all four "munchers" have been lost. A muncher can be lost either by having a troggle eat it or by getting a wrong answer.

Sound is used as feedback. It announces wrong answers, right answers, and a game successfully completed. Wrong answer feedback is a negative sound and a statement telling the student that the munched number is not a prime number.

Ex. Oops! 4 is not a Prime number.
Press Space Bar to continue.

The score is shown at the bottom. Once a student does a couple of games correctly, he is given a cute graphic of "Great Moments in Muncher History" where the muncher is a winner and the troggle is a loser. He may also be put in the Muncher Hall of Fame if his score is among the 10 top scores for that activity.

TEACHER OPTIONS

1. Press Control-S to turn the sound on or off.
2. Press Control-A from the main menu to access the teacher management options.
   - A. Select the activity of Primes by using the arrow keys to move the highlighted box under the "Use" category. Press the return key down once to see "yes". The same can be done to turn off this activity, press return to see "no" in the "Use" category.
   - B. Descriptions of the categories are available if the Teacher presses the "?" key when the highlighted box is on the category in question.

SUGGESTIONS

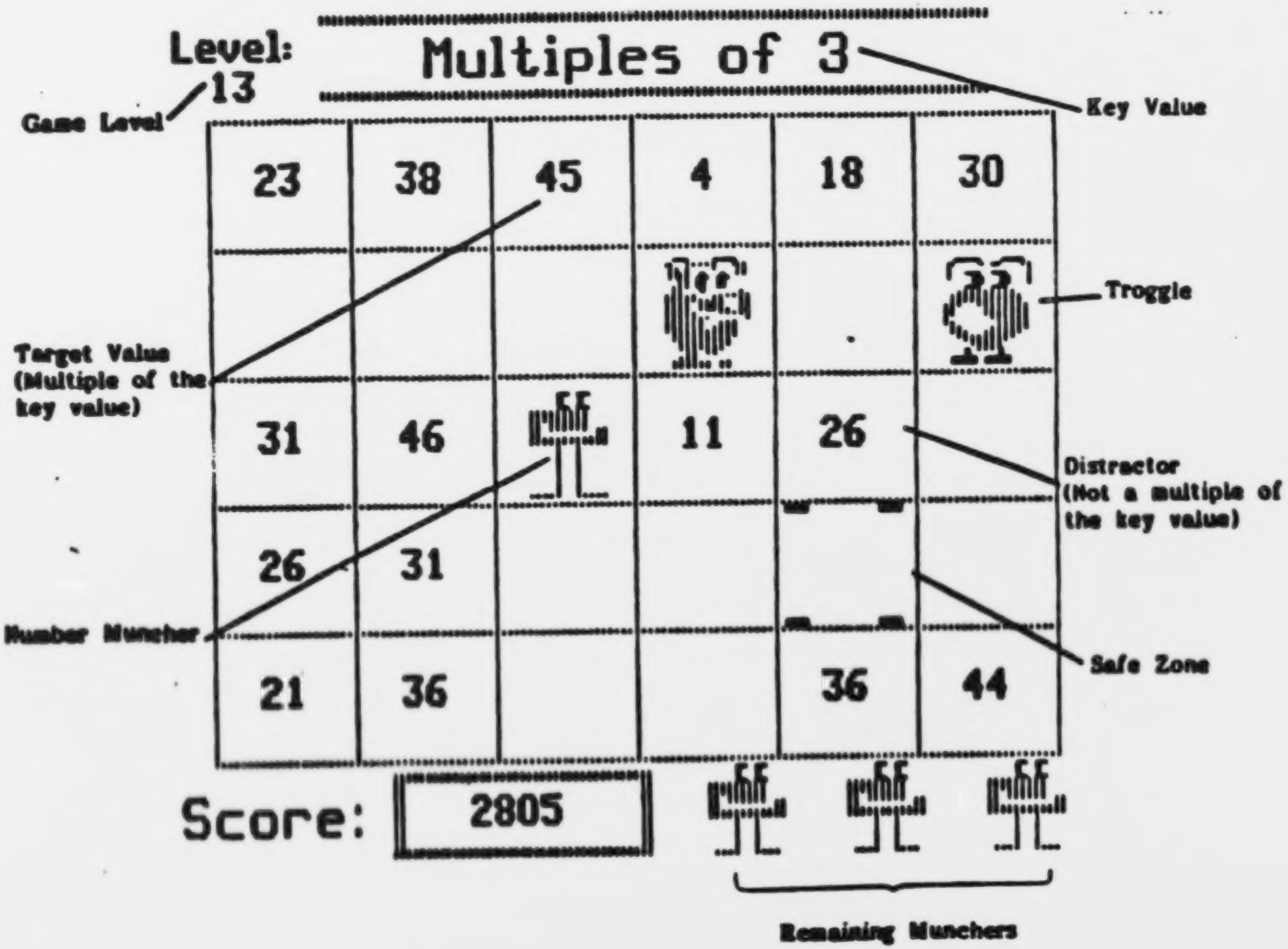
1. Listen for sound to hear if the student is progressing and getting correct answers.
2. Leave the sound on if it does not distract other students. Sound is an important part of the game and the feedback and lets the student know what is happening that he might not otherwise notice.
3. D.T.A. Applications:
   Warm-up
   Independent Practice
   Vocabulary: Prime numbers
4. See the MECC manual for further information.

Number Munchers
(Munchicus digitus)

You start the game with four Number Munchers (three in reserve and one on the game screen). You may earn one additional Muncher if your score reaches 1,000 points and another at 10,000 points. Number Munchers are under your control. This means that you choose the direction that the Number Muncher moves and when it eats a number or expression (targets). If the target eaten matches the key value displayed at the top of the game screen, then points are earned.

702

E.C.I. for E.S.E.


Level:
13
Game Level
Multiples of 3
Key Value
23
38
45
4
18
30
Troggle
Target Value (Multiple of the key value)
31
46
11
26
Distractor (Not a multiple of the key value)
26
31
Number Muncher
Safe Zone
21
36
36
44
Score:
2805
Remaining Munchers

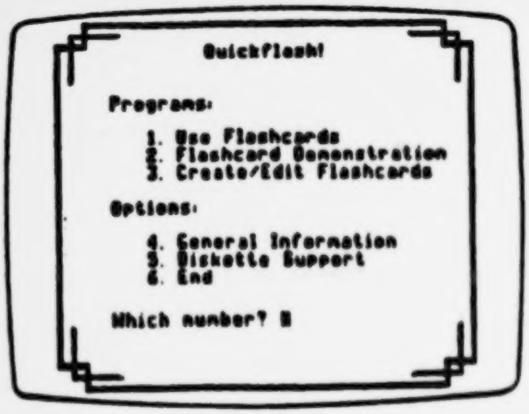
P.G.C./U. of MD. 1988

This is to certify that ____________________

is an award-winning Number Muncher.

NUMBER
MUNCHERS

Teacher ____________________



```
Quickflash!

Programs:

   1. Use Flashcards
   2. Flashcard Demonstration
   3. Create/Edit Flashcards

Options:

   4. General Information
   5. Diskette Support
   6. End

Which number? █
```

SOFTWARE SUMMARY

Company: MECC A-167
Title: QUICKFLASH!
Activities: NUMBER NAME, WORD NAME, TENTHS, HUNDREDTHS, DECIMAL PT., NUMBERS TO WORDS

OBJECTIVES:

MFMT 3.1.1 Write Numbers in Words and Digits

SKILLS:

N1	IDENTIFY PLACE VALUE
N3	WRITE DIGITS FOR WORDS ONE THROUGH NINETEEN
N5	WRITE DIGITS FOR WORDS TWENTY, THIRTY, FORTY...NINETY
N7	WRITE DIGITS FOR HYPHENATED NUMBER WORDS FROM TWENTY-ONE THROUGH NINETY-NINE
N10	IDENTIFY WORD NAMES TENTHS AND HUNDREDTHS FROM THE DIGITS (.1 AND .01)
N12	RECOGNIZE THAT "AND" REPRESENTS THE DECIMAL POINT
N13	WRITE NUMBERS IN WORDS AND DIGITS

NOTE: A special data disk with the activities listed under the ACTIVITY SUMMARY is required to cover the above skills.

ACTIVITY SUMMARY

Quickflash! enables the teacher to construct electronic flashcards with the following additional elements: automatic record keeping, randomization of questions, control over the level of mastery required, printed progress reports, and spelling tolerance. When a spelling tolerance is set into a flashcard set, the student gets the feedback that the answer was correct but the correct spelling was.... The teacher may also limit the pool of flashcards the student works with until mastery of those items is obtained. A time limit may be set if you wish the student to work at a faster rate. Students must type in the answers either as words, letters, or numbers. Once a question is presented the student can answer it, press Return to see the correct answer, or press Escape. If he presses Escape, he will be given the total number of questions and the ones he has learned so far. He is given the choice to: 1. Continue with the flashcards, 2. Review the learned questions, 3. Choose new set of flashcards, or 4. Return to the main menu. If the student gets a wrong answer on the first try, the correct answer is displayed. When a student has mastered a set of flashcards, the program will continue to show his level of performance as mastered even if he does not get them all right at a later time.

The following activities have been developed especially for this project. They are on a special data disk that is needed to run with the Quickflash! program.

NUMBER NAME meets skills N3, N5, and N7 listed above. Students must enter the numbers in this set of 100 questions. An example is: Write the number for: ninety-eight. The student must type in 98 as the answer. (Caution: Do not change the spelling tolerance for this activity since a spelling tolerance will allow any number to be accepted as correct.)

WORD NAME meets skill N10. Ten multiple choice questions deal with recognizing numbers having tenths or hundredths. An example is: Choose the word name: .29

A. Twenty-nine hundredths
B. Twenty-nine

TENTHS meets skills N1 and N10. Ten questions are set up as follows: Write the digit in the tenths place: 298.07 The student must then type in 0 as the answer.

HUNDREDTHS meets skills N1 and N10. Ten questions are set up as follows: Write the digit in the hundredths place: 786.05 The student must then type in 5 as the answer.

DECIMAL POINT meets skill N12. Fifteen questions are set up as follows: Write the word that represents the decimal point: 1.907 The student must then type in AND as the answer.

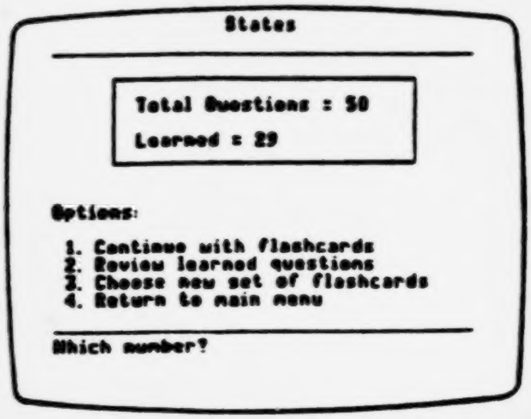
NUMBERS TO WORDS meets skill N13 which is a culmination of all the skills needed for this objective. Twenty questions are set up as follows: Write the number name for: 38.05 The student must then type in THIRTY-EIGHT AND FIVE HUNDREDTHS. (Note: You might want to set a spelling tolerance in this flashcard set since spelling is not a part of the MFMT.)

TEACHER OPTIONS

1. Press CONTROL-A from the main menu to access the teacher management options.
   A. If you wish to enter student names so that students must pick their names from a list displayed on the screen, choose Option 2, "Create/Edit class list."
   B. If you wish to create, edit, or delete existing sets of flashcards, choose CREATE/EDIT FLASHCARDS from the main menu or the "Management Options" menu. (See the manual for more information on how to create flashcards if you do not understand what to do.)
      1. If you wish to set the mastery level, spelling tolerance, time limits, and the number of flashcards in the "working pool," choose Option 4, "Set levels and limits," from the CREATE/EDIT FLASHCARDS menu.

      2. If you do not set the levels and limits, the program automatically assigns the following:
         a. Mastery level is 2 meaning the student must get the answer correct twice before he is considered as mastering the concept. (It may be set from 1 to 10.)
         b. Spelling variation is not allowed.
         c. No time limit is given. (Time may be set from 0, for no limit, to 30 seconds.)
         d. Working pool is the number of questions in the set. (The pool may be set from 1 to N with N being the number of questions in the set.)
   C. To print flashcards, choose Option 5, "Print Flashcards" from the Management Options menu. (NOTE: Any diacritical marks or special characters used in a set will not print as they appear on the screen.)
   D. Student records may be printed or displayed from Option 6, "Printer Support."
   E. Option 4 allows you to control whether the CREATE/EDIT FLASHCARDS program will be displayed on the main menu.

2. Diskette support from the main menu allows you to select one or two disk drives, create a data diskette, or copy a data diskette.



```
States

Total Questions : 50
Learned : 29

Options:

 1. Continue with flashcards
 2. Review learned questions
 3. Choose new set of flashcards
 4. Return to main menu

Which number?
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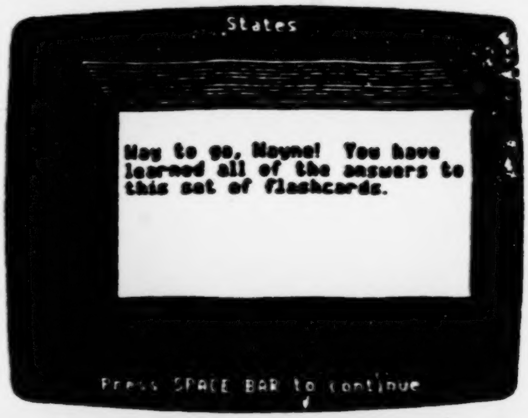

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States

Way to go, Wayne!  You have
learned all of the answers to
this set of flashcards.

Press SPACE BAR to continue
```

SUGGESTIONS

1. If you are not sure whether the program is set for 1 or 2 disk drives, choose Diskette Support from the main menu and set the program according to the number of disk drives that you have.
2. Unless you plan to have students create their own flashcards (which could be a good learning experience), choose Option 4 from the Management Options menu and set the program so that CREATE/EDIT FLASHCARDS does not appear on the main menu.
3. Instruct students to choose #1 "Use Flashcards" from the main menu and then the activity you want them to do on the data diskette. (See the Student Handout which follows this summary for further information on what the student must do.)
4. Adjust the time limit and the working pool according to your student's needs and the difficulty of the activity. (See Teacher Options.)
5. D.T.A. Applications:
    - Warm-up
    - Guided Practice (Students are given the choice to redo missed questions.)
    - Independent Practice
    - Vocabulary: See examples from individual activities.
6. See the MECC manual for further information.

STUDENT HANDOUT
A QUICK GUIDE TO QUICKFLASH!

How to use Quickflash!:

1. Turn on the computer monitor, insert the Quickflash! program diskette in Drive 1, and turn on the computer.

   If your computer has two disk drives, put the data diskette your teacher wants you to use in Drive 2.

   If your computer has only one disk drive, you will need to follow the directions on the computer screen carefully. The computer will tell you when to take out the program diskette and when to put in the data diskette.

2. Type the number 1 for the USE FLASHCARDS program on the main menu and press Return.

3. If you see your name in the list of students shown on the computer screen, type the number of your name.

   If your name is not on the list, type 0 (zero, not the letter O) and add your last name and then your first name when the computer asks you for them.

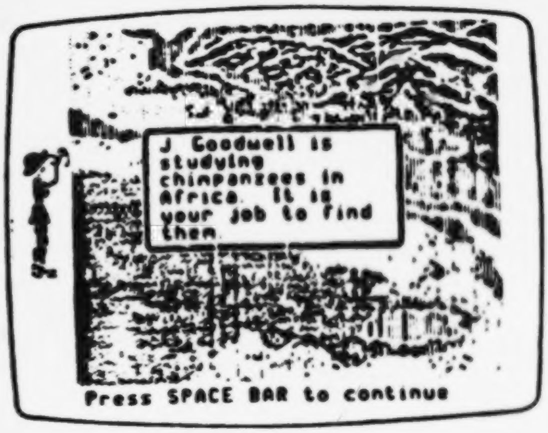
4. Type the number of the set of flashcards you want to use and press Return.

5. When you see a flashcard shown on the screen, type the answer to the question. If your answer is wrong, the computer will show you the right answer. If you do not know the answer, you can press Return to see it.

6. If you want to stop using the flashcards, press the Escape Key once. The computer will tell you how many of the flashcards you have learned. Now you can:

   - choose to go over the flashcards you have learned;
   - work on those you have not learned;
   - choose to use a different set of flashcards; or
   - go back to the main menu.

   It's up to you!



J Goodwell is studying chimpanzees in Africa. It is your job to find them.

Press SPACE BAR to continue

SOFTWARE SUMMARY

Company: MECC A-148
Title: QUOTIENT QUEST
Activity: AFRICAN SAFARI

OBJECTIVES:

MFMT 2.1.4 Divide Whole Numbers
SKILL: D1 RECALL DIVISION NUMBER FACTS

ACTIVITY SUMMARY

Quotient Quest is set up so that the student does five problems and then is allowed to play a game. In AFRICAN SAFARI, students will receive practice in:

dividing numbers with divisors 2 to 9 $72 \div 9 = \_\_\_$

Twenty-five randomly generated problems are presented using common division formats:

$$6\overline{)36} \; : \; 36 \div 6: \; 36/6: \; \frac{36}{6}$$

(The fraction formats are optional.)

Students are given two opportunities to answer a problem correctly. If they answer incorrectly on the second try, help is provided by displaying an array that illustrates the problem or by stating basic division rules that cover the problem. The problem must be answered correctly before proceeding to the next problem.

Students receive a score at the end of the lesson. They are congratulated if they score at or above the mastery level. The mastery level is set at 85% of 25 problems. If they score below the mastery level, they are encouraged to repeat the program.

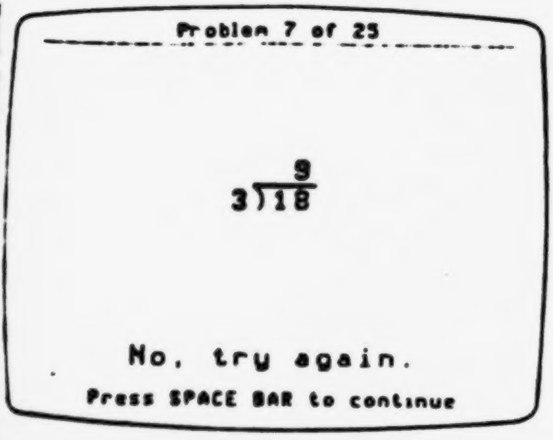
The object of the game of AFRICAN SAFARI is to locate four hidden chimpanzees in the African landscape. Students have ten chances to locate a chimp before returning to the division practice.

TEACHER OPTIONS

1. Number 8 from the main menu is used to turn the sound on or off.
2. Press Control-A from the main menu to access the teacher management options.
   - A. Number 1 "Turn graphics off" will remove the games from the activities so that the student is not allowed to play any games.
   - B. Number 3 "See names and scores" allows you to print student scores or view them on the screen.
   - C. Number 4 allows you to "Clear names and scores." (100 scores may be saved. After that, the oldest score is removed each time a new score is entered.)
   - D. Number 6 "Choose fact display type" allows you to select fraction formats for division practice programs. (Do not choose the fraction formats since they are not consistent with the MFMT.)

SUGGESTIONS

1. If the student is playing the game for the first time, he should choose option number 3 "See instructions" before choosing option number 2 "Play 'AFRICAN SAFARI.'"
2. The game may take too long to play. If the teacher feels it does, the graphics should be turned off in the management options so that the student is not allowed to play the game.
3. If the problems are too easy, press Escape twice to go on to the next activity, TOTEM SWITCH.
4. D.T.A. Applications:
   - Warm-Up
   - Guided Practice
   - Independent Practice
   - Vocabulary: division
5. See the MECC manual for further information.

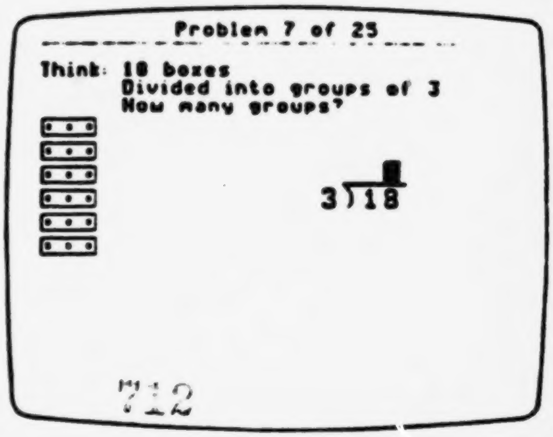


Problem 7 of 25

$3\overline{)18}$ 9

No, try again.

Press SPACE BAR to continue

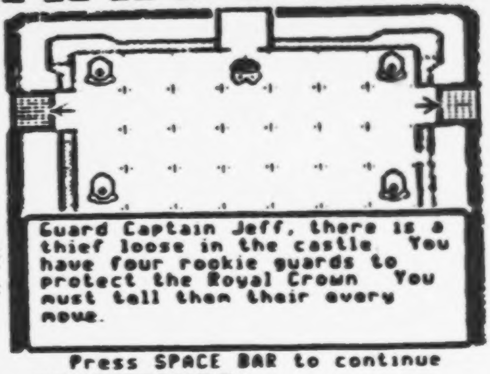


Problem 7 of 25

Think: 18 boxes
Divided into groups of 3
How many groups?

$3\overline{)18}$

712



Guard Captain Jeff, there is a thief loose in the castle. You have four rookie guards to protect the Royal Crown. You must tell them their every move.

Press SPACE BAR to continue

SOFTWARE SUMMARY

Company: MECC A-148
Title: QUOTIENT QUEST
Activity: CASTLE CAPER

OBJECTIVES:

MFMT 2.1.4 Divide Whole Numbers
SKILLS: D2 1-DIGIT DIVISOR INTO 2-DIGIT DIVIDEND, ALL SIGHT DIVISION, NO REMAINDERS
D4 1-DIGIT DIVISOR INTO 3-DIGIT DIVIDEND, MOSTLY SIGHT DIVISION, NO REMAINDERS
D5 1-DIGIT DIVISOR INTO 3-DIGIT DIVIDEND, REMAINDERS POSSIBLE

ACTIVITY SUMMARY

Quotient Quest is set up so that the student does five problems and then is allowed to play a game. In CASTLE CAPER, students will receive practice in:

dividing a two-digit number by itself	$28 \div 28 = \_\_\_$
dividing two-digit dividends that are multiples of the divisors	$3\overline{)\,69}$
dividing three-digit dividends by one-digit divisors, with no remainders	$3\overline{)\,693}$

Twenty randomly generated problems are presented. Students are given two opportunities to answer a problem correctly. If they answer incorrectly on the second try, they are guided through the division process step-by-step or given the rule that any number divided by itself is one. The problem must be answered correctly before proceeding to the next problem.

Students receive a score at the end of the lesson. They are congratulated if they score at or above the mastery level. The mastery level is set at 85% of 20 problems. If they score below the mastery level, they are encouraged to repeat the program.

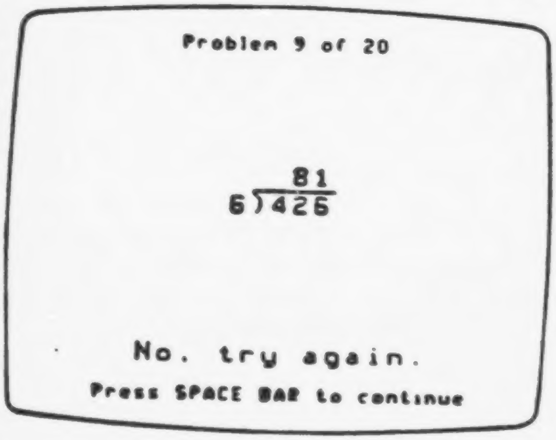
In the game CASTLE CAPER, a wily thief, Shifty Fingers, has managed to enter the castle vault and take the royal crown. Students will help the four palace guards prevent his escape and return him to the castle vault. The guards have the keys to seal off parts of the castle, thereby guiding him into the vault.

TEACHER OPTIONS

1. Number 8 from the main menu is used to turn the sound on or off.
2. Press Control-A from the main menu to access the teacher management options.
   A. Number 1 "Turn graphics off" will remove the games from the activities so that the student is not allowed to play any games.
   B. Number 3 "See names and scores" allows you to print student scores or view them on the screen.
   C. Number 4 allows you to "Clear names and scores." (100 scores may be saved. After that, the oldest score is removed each time a new score is entered.)

SUGGESTIONS

1. If the student is playing the game for the first time, he should choose option number 3 "See instructions" before choosing option number 2 "Play 'CASTLE CAPER.'"
2. If the game is too long or frustrating to the student, the teacher may wish to eliminate it by turning the graphics off in the management options.
3. If the problems are too easy, press Escape twice to go on to the next activity, ORIENTAL TOWER.
4. D.T.A. Applications:
   Warm-Up
   Guided Practice
   Independent Practice
   Vocabulary: none
5. See the MECC manual for further information.



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Problem 9 of 20

   81
6)426

No. try again.
Press SPACE BAR to continue
```

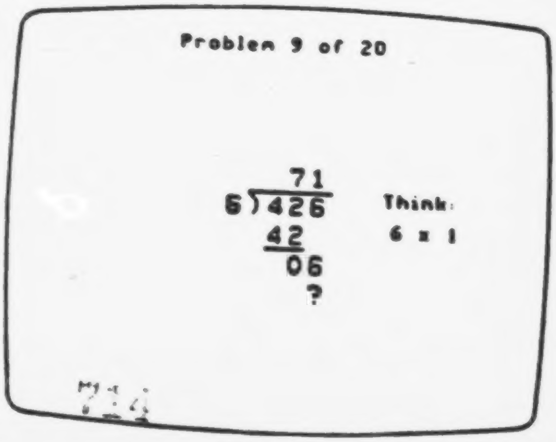

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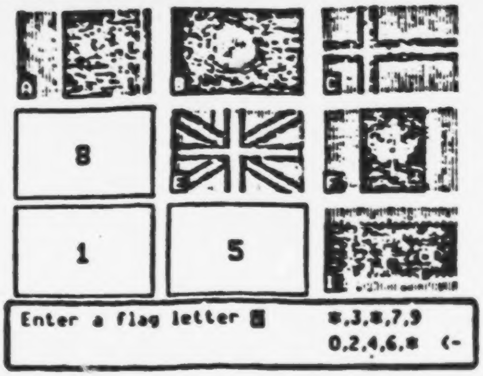
Problem 9 of 20

   71
6)426      Think:
  42       6 x 1
   06
    ?
```

714



Enter a flag letter ▮

■,3,■,7,9
0,2,4,6,■ <-

SOFTWARE SUMMARY

Company: MECC A-148
Title: QUOTIENT QUEST
Activity: MAGIC FLAGS

OBJECTIVES:

MFMT 2.1.4 Divide Whole Numbers
SKILL: D1 RECALL DIVISION NUMBER FACTS

ACTIVITY SUMMARY

Quotient Quest is set up so that the student does five problems and then is allowed to play a game. In MAGIC FLAGS, students will receive practice in:

dividing a number by 1	$28 \div 1 =$ ___
dividing a number by 0	$0 \div 3 =$ ___
dividing a one-digit number by itself	$5 \div 5 =$ ___
dividing numbers with divisors 2 to 5	$32 \div 4 =$ ___

Twenty-five randomly generated problems are presented using common division formats:

$6\overline{)\,36}$; $36 \div 6$; 36/6; $\frac{36}{6}$
(The fraction formats are optional.)

Students are given two opportunities to answer a problem correctly. If they answer incorrectly on the second try, help is provided by displaying an array that illustrates the problem or by stating basic division rules that cover the problem:

Any number divided by itself is one.
Any number divided by zero is zero.

The problem must be answered correctly before proceeding to the next problem.

Students receive a score at the end of the lesson. They are congratulated if they score at or above the mastery level. The mastery level is set at 85% of 25 problems. If they score below the mastery level, they are encouraged to repeat the program.

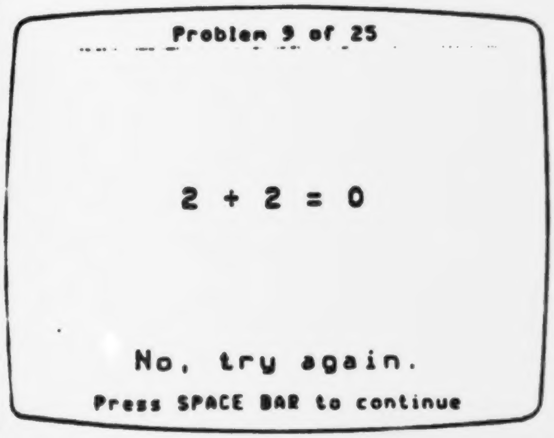
The object of the game of MAGIC FLAGS is to line up three numbers that total 15 on a grid.

TEACHER OPTIONS

1. Number 8 from the main menu is used to turn the sound on or off.
2. Press Control-A from the main menu to access the teacher management options.
   - A. Number 1 "Turn graphics off" will remove the games from the activities so that the student is not allowed to play any games.
   - B. Number 3 "See names and scores" allows you to print student scores or view them on the screen.
   - C. Number 4 allows you to "Clear names and scores." (100 scores may be saved. After that, the oldest score is removed each time a new score is entered.)
   - D. Number 6 "Choose fact display type" allows you to select fraction formats for division practice programs. (Do not choose the fraction formats since they are not consistent with the MFMT.)

SUGGESTIONS

1. If the student is playing the game for the first time, he should choose option number 3 "See instructions" before choosing option number 2 "Play 'MAGIC FLAGS.'"
2. The game MAGIC FLAGS is educational but may take too long to play. If the teacher feels it takes too long, the graphics should be turned off in the management options so that the student is not allowed to play the game.
3. If the problems are too easy, press Escape twice to go on to the next activity, AFRICAN SAFARI.
4. D.T.A. Applications:
   - Warm-Up
   - Guided Practice
   - Independent Practice
   - Vocabulary: division
5. See the MECC manual for further information.

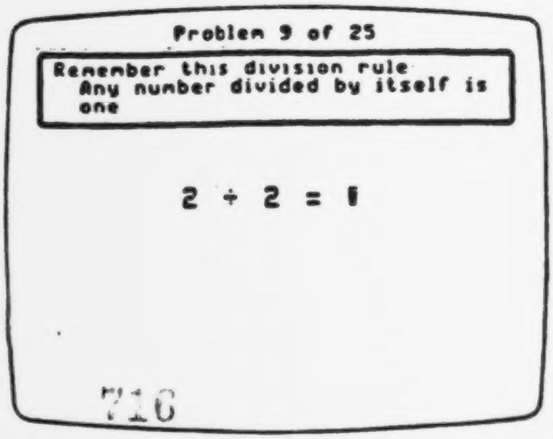


Problem 9 of 25

2 + 2 = 0

No, try again.

Press SPACE BAR to continue

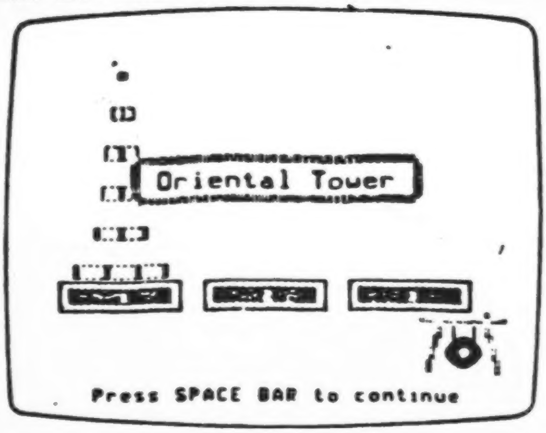


Problem 9 of 25

Remember this division rule
Any number divided by itself is one

2 ÷ 2 = 1

716



SOFTWARE SUMMARY

Company: MECC A-148
Title: QUOTIENT QUEST
Activity: ORIENTAL TOWER

OBJECTIVES:

MFMT 2.1.4 Divide Whole Numbers
SKILLS: D3 1-DIGIT DIVISOR INTO 2-DIGIT DIVIDEND, REMAINDERS POSSIBLE
D5 1-DIGIT DIVISOR INTO 3-DIGIT DIVIDEND, REMAINDERS POSSIBLE
D6 1-DIGIT DIVISOR INTO 4-DIGIT DIVIDEND, MOSTLY SIGHT DIVISION, NO REMAINDERS

ACTIVITY SUMMARY

Quotient Quest is set up so that the student does five problems and then is allowed to play a game. In ORIENTAL TOWER, students will receive practice in:

dividing a number whose first digit is a multiple of the divisor (with remainders)	4) 89
dividing a number whose first two digits form a multiple of the divisor (with remainders)	6) 249
dividing a number in which the quotient will end in zero (some have remainders)	6) 365 3) 1260

Twenty randomly generated problems are presented. The student must press 'R' to enter an 'r' for a remainder. Students are given two opportunities to answer a problem correctly. If they answer incorrectly on the second try, they are guided through the division process step-by-step. The problem must be answered correctly before proceeding to the next problem.

Students receive a score at the end of the lesson. They are congratulated if they score at or above the mastery level. The mastery level is set at 85% of 20 problems. If they score below the mastery level, they are encouraged to repeat the program.

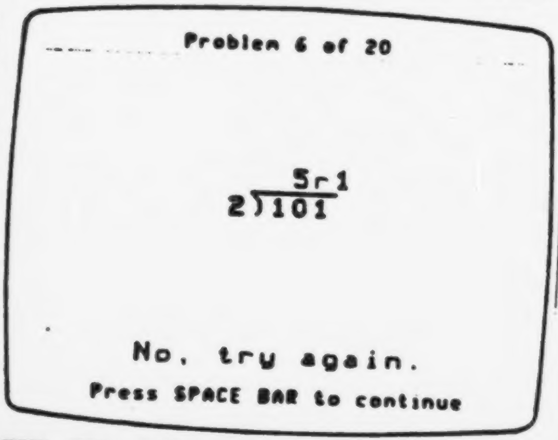
The game ORIENTAL TOWER is a strategy game which involves moving sections of a tower from Base 1 to reconstruct it on Base 3. A larger section, however, cannot be placed on top of a smaller section. Students may choose to play a beginner's game with three sections of a tower or an intermediate game with four sections. An advanced game with five sections is allowed in the final segment.

TEACHER OPTIONS

1. Number 8 from the main menu is used to turn the sound on or off.
2. Press Control-A from the main menu to access the teacher management options.
   - A. Number 1 "Turn graphics off" will remove the games from the activities so that the student is not allowed to play any games.
   - B. Number 3 "See names and scores" allows you to print student scores or view them on the screen.
   - C. Number 4 allows you to "Clear names and scores." (100 scores may be saved. After that, the oldest score is removed each time a new score is entered.)

SUGGESTIONS

1. If the student is playing the game for the first time, he should choose option number 3 "See instructions" before choosing option number 2 "Play 'ORIENTAL TOWER.'"
2. If the game takes too long and is frustrating for the student, the teacher may wish to eliminate it by turning the graphics off in the management options.
3. If the problems are too easy, press Escape twice to go on to the next activity, PEARL DIVERS.
4. D.T.A. Applications:
   - Warm-Up
   - Guided Practice
   - Independent Practice
   - Vocabulary: remainder
5. See the MECC manual for further information.

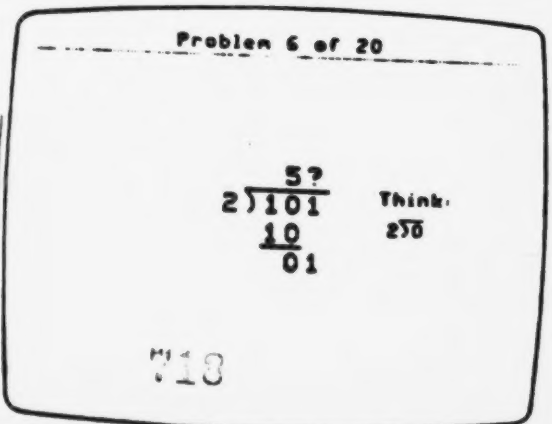


Problem 6 of 20

$$\begin{array}{r} 5r1 \\ 2\overline{)101} \end{array}$$

No, try again.

Press SPACE BAR to continue

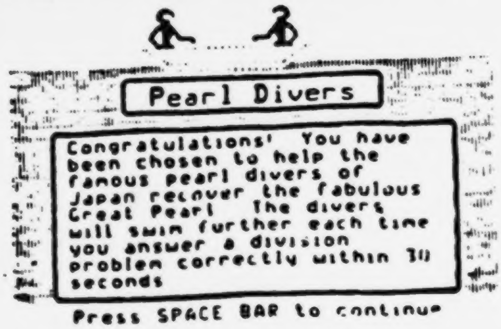


Problem 6 of 20

$$\begin{array}{r} 5? \\ 2\overline{)101} \\ \underline{10} \\ 01 \end{array}$$

Think:

$2\overline{)0}$



Pearl Divers

Congratulations! You have been chosen to help the famous pearl divers of Japan recover the fabulous Great Pearl. The divers will swim further each time you answer a division problem correctly within 30 seconds

Press SPACE BAR to continue

SOFTWARE SUMMARY

Company: MECC A-148
Title: QUOTIENT QUEST
Activity: PEARL DIVERS

OBJECTIVES:

MFMT 2.1.4 Divide Whole Numbers
SKILLS: D1 RECALL DIVISION NUMBER FACTS
D2 1-DIGIT DIVISOR INTO 2-DIGIT DIVIDEND, ALL SIGHT DIVISION, NO REMAINDERS
D3 1-DIGIT DIVISOR INTO 2-DIGIT DIVIDEND, REMAINDERS POSSIBLE
D4 1-DIGIT DIVISOR INTO 3-DIGIT DIVIDEND, MOSTLY SIGHT DIVISION, NO REMAINDERS
D5 1-DIGIT DIVISOR INTO 3-DIGIT DIVIDEND, REMAINDERS POSSIBLE
D6 1-DIGIT DIVISOR INTO 4-DIGIT DIVIDEND, MOSTLY SIGHT DIVISION, NO REMAINDERS

ACTIVITY SUMMARY

PEARL DIVERS is a review of all the activities in Quotient Quest in a timed drill format. Graphic reinforcement is provided by two pearl divers who try to get a giant pearl off the bottom of the sea. The amount of time allowed to complete each problem can be set in the teacher management options. If the graphics are turned off, the drill is not timed.

Twenty-four randomly generated review problems are presented. Students are given as many chances as needed to answer a problem within the time allotted. If they answer incorrectly after the allotted time has run out, they are guided through the division process step-by-step. The problem must be answered correctly before proceeding to the next problem.

For each problem answered correctly within the given time limit, the divers move closer to the giant pearl. If the student takes too much time, the frame around the problem changes color. The pearl divers will get the pearl back to the surface if mastery is achieved. If a perfect score is obtained, a porpoise dances on the surface of the sea.

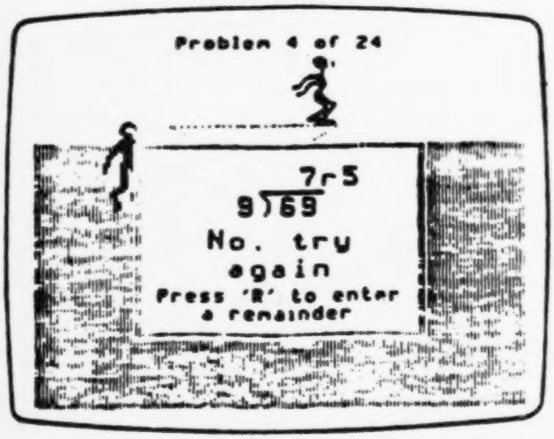
Students receive a score at the end of the lesson. They are congratulated if they score at or above the mastery level. The mastery level is set at 85% of 20 problems. If they score below the mastery level, they are encouraged to repeat the program.

TEACHER OPTIONS

1. Number 8 from the main menu is used to turn the sound on or off.
2. Press Control-A from the main menu to access the teacher management options.
   - A. Number 1 "Turn graphics off" will remove the timing from PEARL DIVERS so that it is untimed.
   - B. Number 2 "Set review time" allows you to change the amount of time for completing each problem from a minimum of 2 seconds to a maximum of 255 seconds. The default setting is 30 seconds. If the graphics have been turned off, this drill is not timed.
   - C. Number 3 "See names and scores" allows you to print student scores or view them on the screen.
   - D. Number 4 allows you to "Clear names and scores." (100 scores may be saved. After that, the oldest score is removed each time a new score is entered.)

SUGGESTIONS

1. The teacher will have to use his/her own judgment as to the appropriate timing for this review drill.
2. D.T.A. Applications:
   - Warm-Up
   - Guided Practice
   - Independent Practice
   - Vocabulary: remainder
3. See the MECC manual for further information.

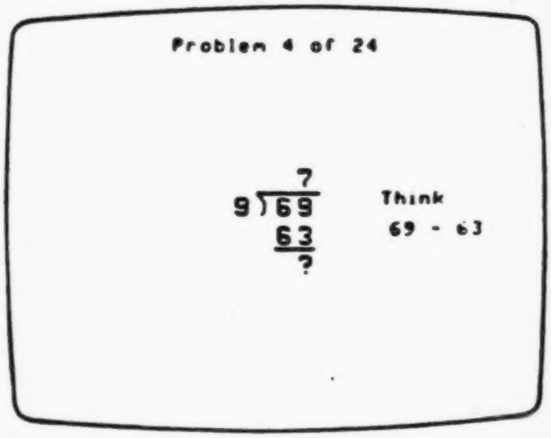


Problem 4 of 24

$9\overline{)69}$ 7r5

No. try again

Press 'R' to enter a remainder



Problem 4 of 24

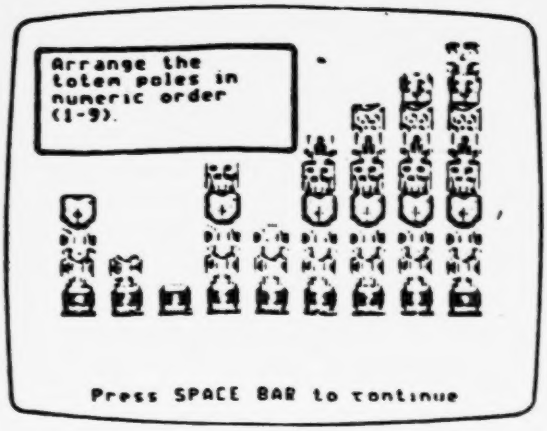
$9\overline{)69}$ 7

63

?

Think

69 - 63



Arrange the totem poles in numeric order (1-9).

Press SPACE BAR to continue

SOFTWARE SUMMARY

Company: MECC A-148
Title: QUOTIENT QUEST
Activity: TOTEM SWITCH

OBJECTIVES:

MFMT 2.1.4 Divide Whole Numbers
SKILL: D3 1-DIGIT DIVISOR INTO 2-DIGIT DIVIDEND, REMAINDERS POSSIBLE

ACTIVITY SUMMARY

Quotient Quest is set up so that the student does five problems and then is allowed to play a game. In TOTEM SWITCH, students will receive practice in:

- dividing numbers with divisors 2 to 9 $5\overline{)\,28}$
- dividing with remainders $7\overline{)\,61}$

Twenty randomly generated problems are presented. The student must press 'R' to enter an 'r' for a remainder. Students are given two opportunities to answer a problem correctly. If they answer incorrectly on the second try, they are guided through the division process step-by-step. The problem must be answered correctly before proceeding to the next problem.

Students receive a score at the end of the lesson. They are congratulated if they score at or above the mastery level. The mastery level is set at 80% of 20 problems. If they score below the mastery level, they are encouraged to repeat the program.

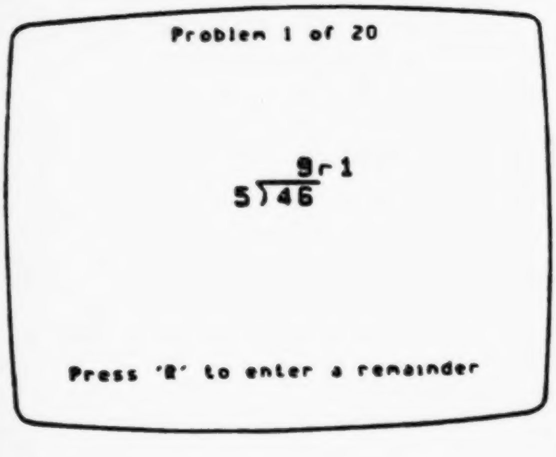
The object of the game of TOTEM SWITCH is to switch the positions of the totem poles until they are arranged in numeric order from 1 to 9. Students may choose a beginner's game with five poles or an intermediate game with seven poles. An advanced game with nine poles is allowed in the final segment.

TEACHER OPTIONS

1. Number 8 from the main menu is used to turn the sound on or off.
2. Press Control-A from the main menu to access the teacher management options.
   - A. Number 1 "Turn graphics off" will remove the games from the activities so that the student is not allowed to play any games.
   - B. Number 3 "See names and scores" allows you to print student scores or view them on the screen.
   - C. Number 4 allows you to "Clear names and scores." (100 scores may be saved. After that, the oldest score is removed each time a new score is entered.)

SUGGESTIONS

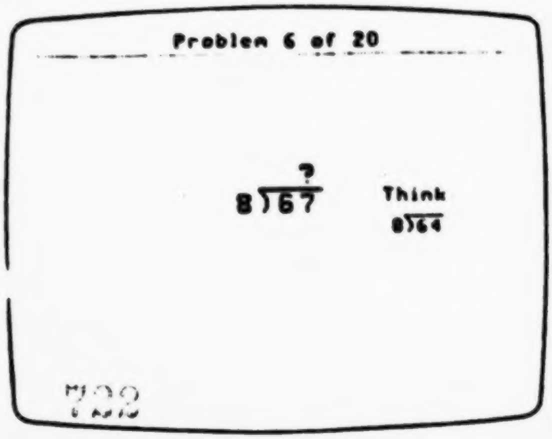
1. If the student is playing the game for the first time, he should choose option number 3 "See instructions" before choosing option number 2 "Play 'TOTEM SWITCH.'"
2. The game is difficult and can be frustrating. Therefore, the teacher may wish to eliminate it by turning the graphics off in the management options.
3. If the problems are too easy, press Escape twice to go on to the next activity, CASTLE CAPER.
4. D.T.A. Applications:
   Warm-Up
   Guided Practice
   Independent Practice
   Vocabulary: remainder
5. See the MECC manual for further information.



Problem 1 of 20

$$\begin{array}{r} 9\ r\ 1 \\ 5\overline{)46} \end{array}$$

Press 'R' to enter a remainder

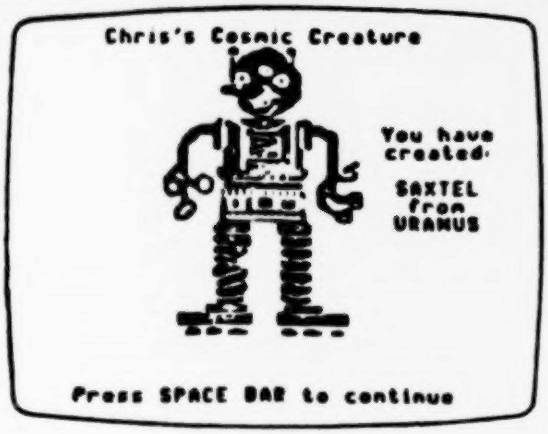


Problem 6 of 20

$$\begin{array}{r} ? \\ 8\overline{)67} \end{array}$$

Think

$8\overline{)64}$



Chris's Cosmic Creature

You have created:

SAXTEL from URANUS

Press SPACE BAR to continue

SOFTWARE SUMMARY

Company: MECC A-145
Title: Space Subtraction
Activity: Cosmic Creature

OBJECTIVES:

MFMT 2.1.2 Subtract Whole Numbers
SKILL: S1 RECALL SUBTRACTION NUMBER FACTS

ACTIVITY SUMMARY

The students are given 25 subtraction problems. After each set of 5 problems the student builds a robot part by part. The problems in this activity are very basic.

Students are presented with a subtraction problem. They enter their answers using the number keys, beginning with the ones column. The student enters in the complete answer then presses Return. There is no regrouping in this program.

For a correct response the student will see the word "RIGHT" appear under their answer.

For an incorrect response the student will see the words "NO TRY AGAIN." After a second incorrect response the student receives help. They are assisted with a number line that has star filled boxes over the same amount of numbers as the top number in the equation. The stars in the boxes disappear one by one, demonstrating the subtraction of the bottom number. Students are then expected to count the remaining boxes and enter the number.

After completing five problems the student is presented with various parts of a "Cosmic Creature." The student selects out of a set of 4 parts to build their customized robot. Each time the student selects the body part, they see how much of the robot is built. When they complete 25 problems successfully, they see the robot they've created.

TEACHER OPTIONS

1. The sound can be turned "on" or "off" by pressing number 7 at the main menu.

2. Press Control-A while at the main menu to get into the teacher management.
   A. To turn the graphics "off", press number 1, then Return and the graphics will be turned "off".
   B. The other management options are self-explanatory. They are: See names and scores; Clear names and scores; Set up printer; Return to main menue.
3. The learning objectives in MECC'S COSMIC CREATURE are:
   *SUBTRACT A SINGLE-DIGIT NUMBER FROM A SINGLE DIGIT NUMBER (FACTS)
   *SUBTRACT A SINGLE-DIGIT NUMBER FROM ITSELF
   *SUBTRACTING ZERO FROM A SINGLE-DIGIT NUMBER

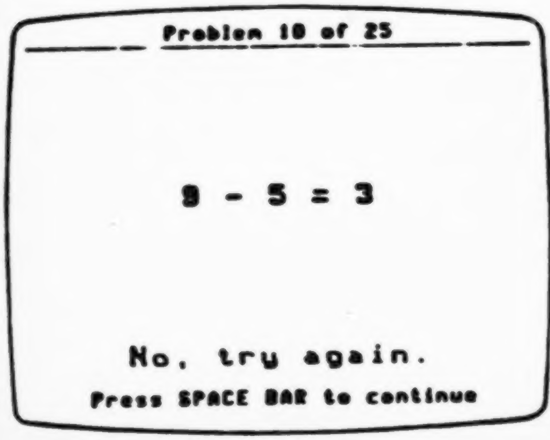
SUGGESTIONS

1. For this activity the sound is "on" during the robot building only. If it is distracting to the rest of the class turn it "off". If it is not distracting, it can be entertaining to the student playing the game.

2. D.T.A. Applications
   Warm-up
   Guided Practice
   Independent Practice
   Vocabulary: None

3. Turn the graphics "off" (at the main menu #7) if the student takes more time on the game than necessary or if the game seems to break up the learning activity.

4. See the MECC manual for further information.

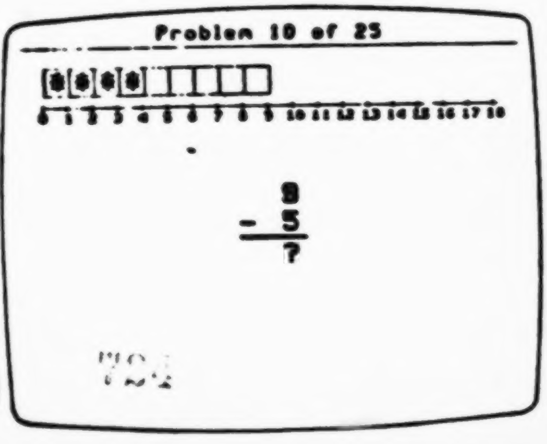


Problem 10 of 25

9 - 5 = 3

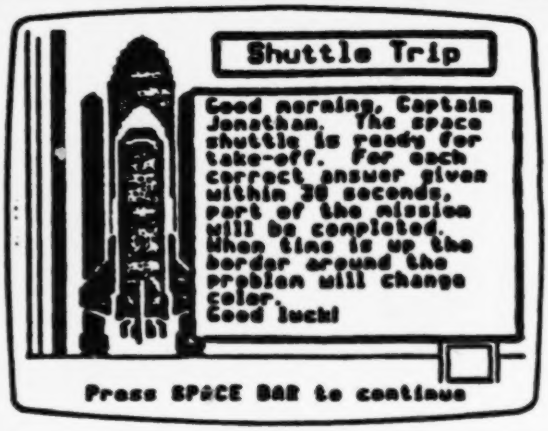
No, try again.

Press SPACE BAR to continue



Problem 10 of 25

$$\begin{array}{r} 9 \\ -\ 5 \\ \hline ? \end{array}$$



Shuttle Trip

Good morning, Captain Jonathan. The space shuttle is ready for take-off. For each correct answer given within 30 seconds, part of the mission will be completed. When time is up the border around the problem will change color.
Good luck!

Press SPACE BAR to continue

SOFTWARE SUMMARY

Company: MECC A-145
Title: SPACE SUBTRACTION
Activity: SHUTTLE TRIP

OBJECTIVES:

MFMT 2.1.2 Subtract Whole Numbers
SKILL: Review:
S1 RECALL SUBTRACTION NUMBER FACTS
S2 SUBTRACT TWO NUMBERS WITH UP TO 2 DIGITS EACH, NO REGROUPING
S3 SUBTRACT TWO NUMBERS WITH UP TO 3 DIGITS EACH, NO REGROUPING

ACTIVITY SUMMARY

The students are given 20 subtraction problems. After each set of problems that the student answers on the first attempt another step in the graphics shuttle mission is accomplished. If perfect score is obtained, the crew receives a warm greeting. Students are given as many chances as needed to answer a problem correctly. If they answer incorrectly after the allotted time has run out, help is provided.

Problems are presented in both verticle and horizontal format. They enter their answers using the number keys, beginning with the ones column. The student enters in the complete answer then presses Return. There is no regrouping in this program.

For an incorrect response the words "NO, TRY AGAIN" will appear at the bottom of the screen. After the alloted time runs out the student receives help. They are assisted with a pink rectangular box that surrounds the numbers that should be worked with. The student must select the correct answer to move to the next column.

At the end of a lesson the student receives a scoring frame that informs them of the number of problems they answered correctly on the first attempt.

Ex. You did 20 problems.
You got 20 problems right on the first try
VERY GOOD!!!
OR
You did 20 problems.
You got 15 problems right on the first try.
Please try SHUTTLE TRIP again.

TEACHER OPTIONS

1. The sound can be turned "off" or "on" by pressing number 7 at the main menu.

2. Press Control-A while at the main menu to get into the teacher management.
   A. To turn the graphics "off", press number 1, then Return.
   B. To adjust the time press number 2, then Return, enter in the time that will be allowed for each problem to be answered. The range is 2-255 seconds.
   C. The other management options are self-explanatory. They are: See names and scores; Clear names and scores; Set up printer; Return to main menu.

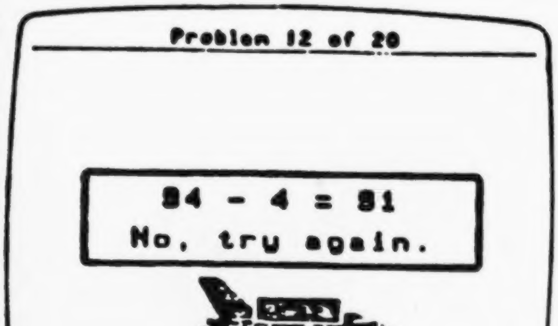
SUGGESTIONS

1. For this activity the sound is "on" during the graphics section. If it is distracting to the rest of the class turn it "off" (number 7 at the main menu). If it is not distracting, it can be entertaining to the student playing the game.

2. D.T.A. Applications
   Warm-up
   Guided Practice
   Independent Practice
   Vocabulary: None

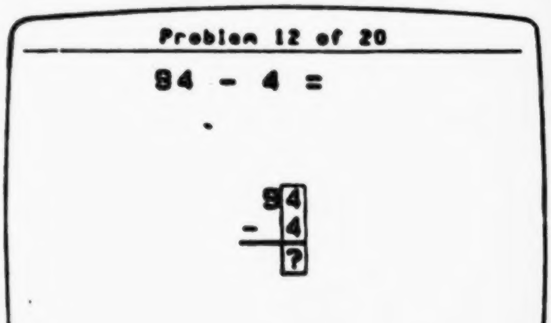
3. Turn the graphics "off" (at the main menu #7) if the student takes more time on the game than necessary or if the game seems to break up the learning activity. When the graphics are turned "off", the students do not get the option menu after a set of eight problems.

4. See the MECC manual for further information.



Problem 12 of 20

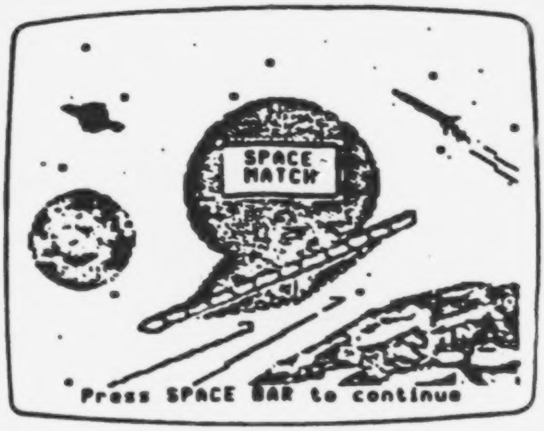
84 - 4 = 81
No, try again.



Problem 12 of 20

84 - 4 =

```
 84
- 4
  ?
```



SOFTWARE SUMMARY

Company: MECC A-145
Title: SPACE SUBTRACTION
Activity: SPACE MATCH

OBJECTIVES:

MFMT 2.1.2 Subtract Whole Numbers
SKILL: S2 SUBTRACT TWO NUMBERS WITH UP TO 2 DIGITS EACH, NO REGROUPING
S3 SUBTRACT TWO NUMBERS WITH UP TO 3 DIGITS EACH, NO REGROUPING

ACTIVITY SUMMARY

The students are given 20 subtraction problems. After each set of five problems the student has the option to play the game "SPACE MATCH."

Students are presented with a subtraction problem in either verticle or horizontal format. They enter their answers using the number keys, beginning with the ones column. The student enters in the complete answer then presses Return. There is no regrouping in this program.

The students are immediately presented with the math problems. For an incorrect response the words "NO, TRY AGAIN" appear on the bottom of the screen. After a second incorrect response they are prompted by a pink rectangular box which highlights the numerals that should be calculated. The student must enter the correct answer to move to the next column.

When the student has completed eight problems he/she is presented with three options:

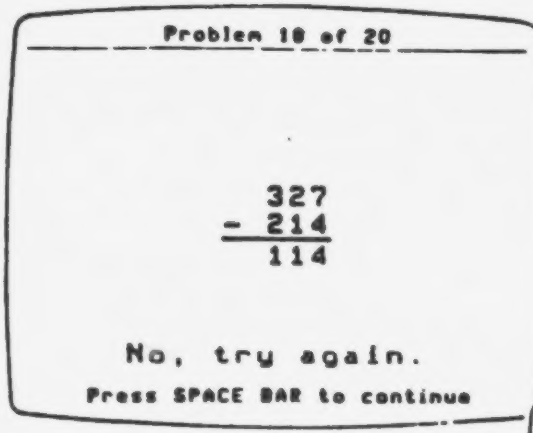
1. Continue working problems
2. Play ZEEMOON WALK
3. See instructions

727

The object of the game is to try to match various "space" words, planet names, or planet symbols. The student presses a number in column 1 and then tries to find its match by pressing a number in column 2.

At the end of a lesson the student receives a scoring frame that informs them of the number of problems they answered correctly on the first attempt.

Ex. You did 20 problems.
You got 19 problems right on the first try
VERY GOOD!!!
You are ready for SHUTTLE TRIP.
or
You did 20 problems.
You got 14 problems right on the first try.
Please try SPACE WALK again.

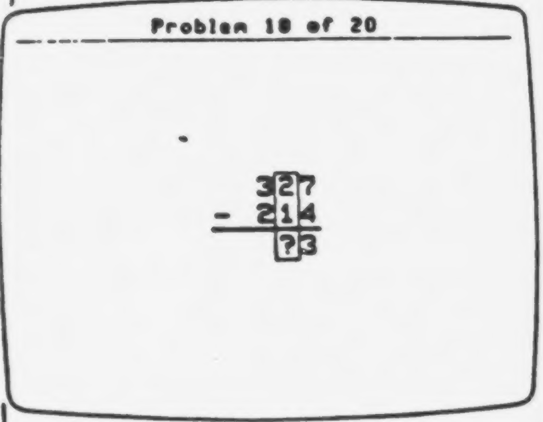


Problem 10 of 20

```
  327
- 214
  114
```

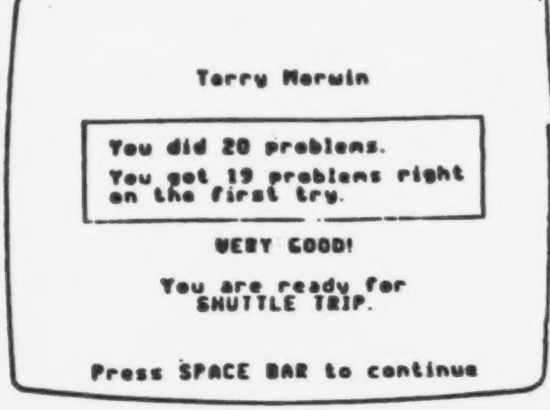
No, try again.

Press SPACE BAR to continue



Problem 10 of 20

```
  327
- 214
   ?3
```



Terry Merwin

You did 20 problems.
You got 19 problems right on the first try.

VERY GOOD!

You are ready for SHUTTLE TRIP.

Press SPACE BAR to continue

TEACHER OPTIONS

1. The sound can be turned "off" or "on" by pressing number 7 at the main menu.

2. Press Control-A while at the main menu to get into the teacher management.
   A. To turn the graphics "off", press number 1, then Return
   B. The other management options are self-explanatory. They are: See names and scores; Clear names and scores; Set up printer; Return to main menu.
3. The learning objectives in MECC'S SPACE MATCH are:

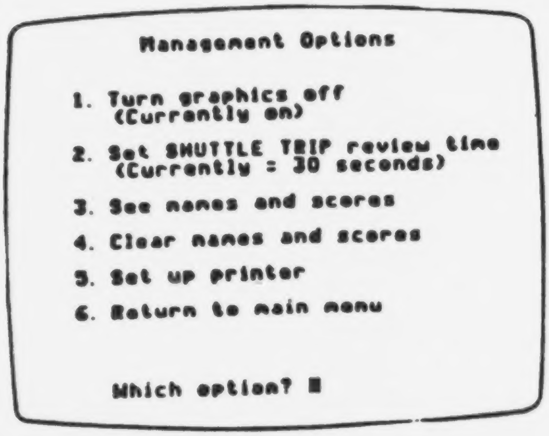
SUGGESTIONS

1. For this activity the sound is "on" during the game only. If it is distracting to the rest of the class turn it "off". If it is not distracting, it can be entertaining to the student playing the game.

2. D.T.A. Applications
   Warm-up
   Guided Practice
   Independent Practice
   Vocabulary: None

3. Turn the graphics "off" (at the main menu #7) if the student takes more time on the game than necessary or if the game seems to break up the learning activity. When the graphics are turned off, the students do not get the option menu after a set of eight problems.

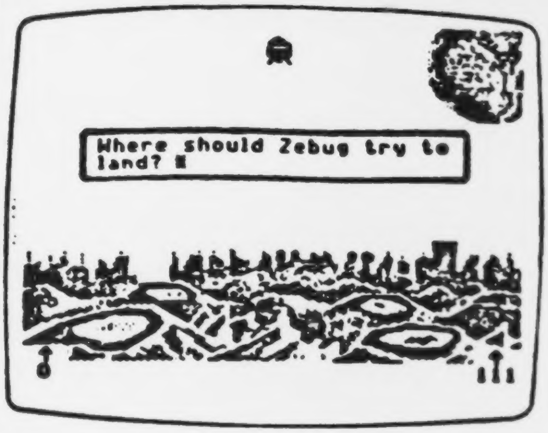
4. See the MECC manual for further informatation.



Management Options

1. Turn graphics off
   (Currently on)
2. Set SHUTTLE TRIP review time
   (Currently = 30 seconds)
3. See names and scores
4. Clear names and scores
5. Set up printer
6. Return to main menu

Which option? ■



Where should Zebug try to land?

SOFTWARE SUMMARY

Company: MECC A-145
Title: SPACE SUBTRACTION
Activity: ZEMOON WALK

OBJECTIVE:

MFMT 2.1.2 Subtract Whole Numbers
SKILL: S1 RECALL SUBTRACTION NUMBER FACTS

ACTIVITY SUMMARY

The students are given 24 subtraction problems. After each set of five problems the students have the option to play the game "ZEMOON WALK."

Students are presented with a subtraction problem in either vertical or horizontal format. They enter their answers by using the number keys, beginning with the ones column. The student enters in the complete answer then presses Return. There is no regrouping in this program.

The students are immediately presented with the math problems. For an incorrect response the words "NO, TRY AGAIN" appear at the bottom of the screen. After a second incorrect response the student receives help. They are prompted by a pink rectangular box that surrounds the numbers that should be calculated. The student must select the correct answer to move to the next column. The pink rectangle surrounds the hundreds column and the student again must enter the correct answer.

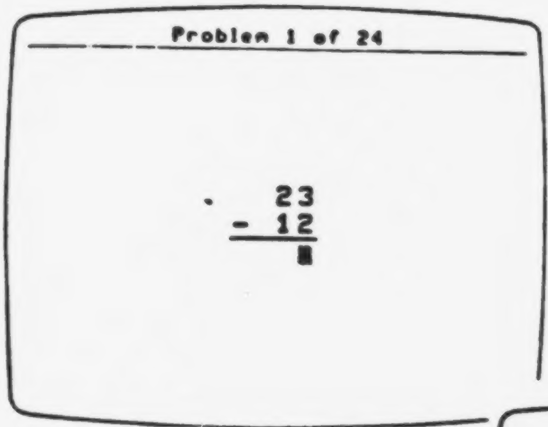
When the student has completed eight problems he/she is presented with three options:

1. Continue working problems
2. Play ZEEMOON WALK
3. See instructions

The object of the game is to try to land Zebug safely on the moon. It is based on estimation skills, using two given numbers as endpoints to aid in the landing. The student enters in a number between the given endpoints, presses Return and the written feedback is either: "It is not safe to land here, Please try again." or "We are out of fuel." The Zebug is out of fuel after three attempts to land. When out of fuel Zebug crash lands on the moon and the students return to the subtraction drill by pressing the space bar.

At the end of a lesson the student receives a scoring frame that informs them of the number of problems they answered correctly on the first attempt.

Ex. You did 24 problems.
You got 23 problems right on the first try
Very Good!!
You are ready for SPACE MATCH.
OR
You did 24 problems.
You got 16 problems right on the first try.
Please try ZEMOON WALK again.



Problem 1 of 24

```
   23
 - 12
 ----
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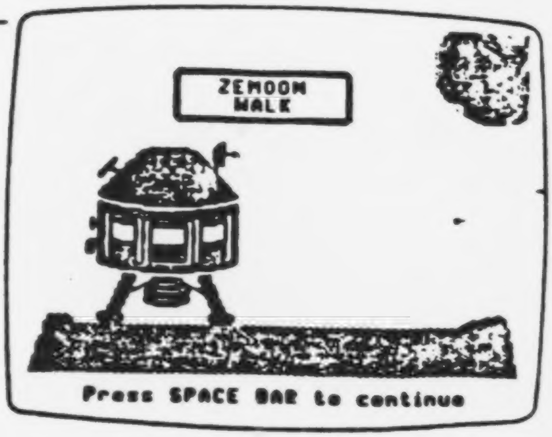


TEACHER OPTIONS

1. The sound can be turned "off" or "on" by pressing number 7 at the main menu.

2. Press Control-A at the main menu to get into the teacher management (See "How to Modify the Disk" in the Teachers Manual)
   - A. To turn the graphics "off" or "on", press number 1. then Return.
   - B. The other management options are self-explanatory. They are: See names and scores: Clear names and scores: Set up printer: Return to main menu.

3. The learning objectives in MECC's ZEMOON WALK are:
   * SUBTRACTING A TWO-DIGIT MULTIPLE OF 10 FROM A TWO DIGIT MULTIPLE OF 10:
   * SUBTRACTING A SINGLE-DIGIT NUMBER FROM A TWO-DIGIT NUMBER IN HORIZONTAL FORMAT;
   * SUBTRACTING A TWO-DIGIT NUMBER FROM A TWO-DIGIT NUMBER WITH NO REGROUPING

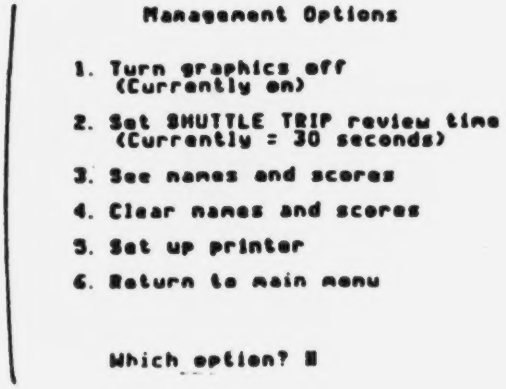
SUGGESTIONS

1. For this activity the sound is on during the game section only. If it is distracting to the rest of the class turn it off. If it is not distracting, it can be entertaining to the student playing the game.

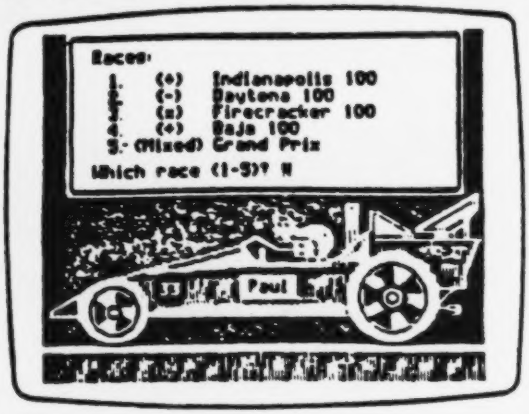
2. D.T.A. Applications
   Warm-up
   Guided Practice
   Independent Practice
   Vocabulary: None

3. Turn the graphics off (at the main menu #7) if the student takes more time on the game than necessary or if the game seems to break up the learning activity. When the graphics are turned "off", the students do not get the option menu after a set of eight problems.

4. See the MECC manual for further information.



```
     Management Options

 1. Turn graphics off
    (Currently on)

 2. Set SHUTTLE TRIP review time
    (Currently = 30 seconds)

 3. See names and scores

 4. Clear names and scores

 5. Set up printer

 6. Return to main menu


   Which option? █
```



```
Races:
  1.   (+)    Indianapolis 100
  2.   (-)    Daytona 100
  3.   (x)    Firecracker 100
  4.   (÷)    Baja 100
  5. (Mixed) Grand Prix

Which race (1-5)? N
```

SOFTWARE SUMMARY

Company: MECC A-169
Title: SPEEDWAY MATH
Activity: THE BIG RACE

OBJECTIVES:

MFMT: 2.1.1 Add Whole Numbers
2.1.2 Subtract Whole Numbers
2.1.3 Multiply Whole Numbers
2.1.4 Divide Whole Numbers

SKILLS: A1 RECALL ADDITION NUMBER FACTS
S1 RECALL SUBTRACTION NUMBER FACTS
M1 RECALL MULTIPLICATION NUMBER FACTS
D1 RECALL DIVISION NUMBER FACTS

ACTIVITY SUMMARY

THE BIG RACE times students as they do a set of 100 basic arithmetic facts. The availability of the operations, the format of the problems presented, and the range of problem sizes are determined by pre-set teacher options. An option is also available to design THE BIG RACE. This includes naming the race, specifying the number of problems presented, and defining optional clubs for fast times or perfect scores. This program provides practice in quick recall of the following:

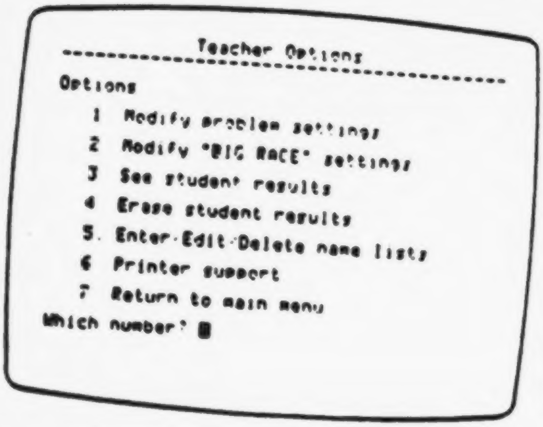
basic addition facts with sums up to 18
basic subtraction facts with minuends up to 18
basic multiplication facts with factors up to 12
basic division facts with divisors up to 12

During the race, the student can take up to two "pit stops." For each pit stop taken, five seconds will be added to his time. The time, score, and speed are reported at the conclusion of the race. If the time is fast enough or a perfect score is achieved, the student can be placed in the Hall of Fame and/or join teacher-defined clubs. One club is based on time and score, while the other is for students getting a perfect score. Students are given an opportunity to reveiw any problems missed. They are shown their incorrect response in the upper left corner and given two chances to answer the problem correctly.

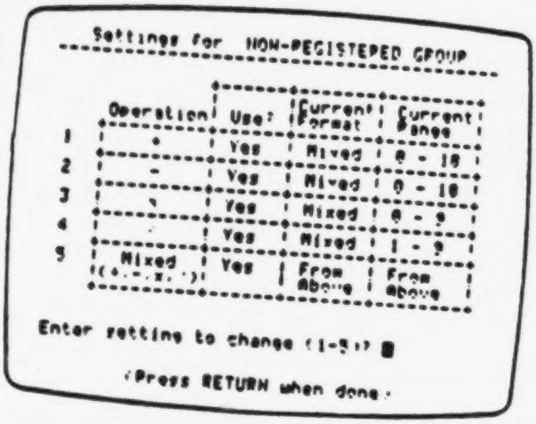
Sound is not used in this activity.

TEACHER OPTIONS

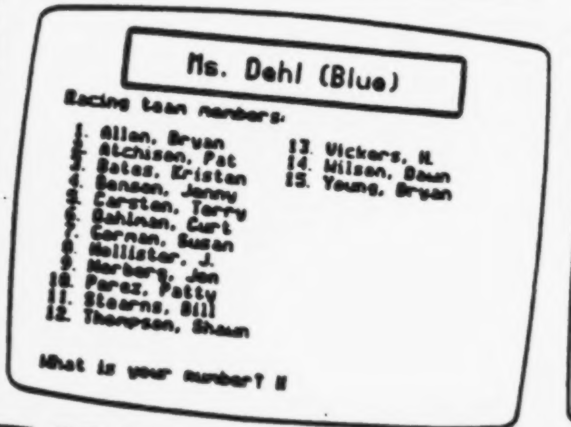
1. Press Control-A from the main menu to access the teacher management options.
   - A. -Select the appropriate operation (+, -, x, --) you wish the students to work on.
   - B. Select the vertical format for problem format since that is the way problems are presented on the MFMT.
   - C. Problem ranges may be adjusted according to teacher specifications.
   - D. Teachers can design the actual races with the above options differing per class registered plus specify how many problems should be given.
   - E. Teachers can design the two clubs available--one being based on time and score and the other for perfect scores. A student could qualify for both clubs during any race.
   - F. Teachers can make use of the "Enter/Edit/Delete name lists" which provides student name selection from a menu, different teacher options for each class, and more organized record-keeping. (Students not registered using this feature can still use the program by selecting the "None of the above" option.)
   - G. Student performance can be viewed, printed, and erased.



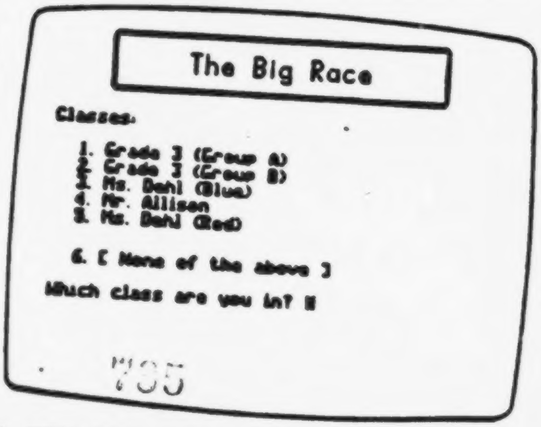
```
                Teacher Options
------------------------------------------------
Options

   1  Modify problem settings
   2  Modify "BIG RACE" settings
   3  See student results
   4  Erase student results
   5. Enter/Edit/Delete name lists
   6  Printer support
   7  Return to main menu
Which number? █
```



```
   Settings for  NON-REGISTERED GROUP
----------------------------------------------
              +-------+---------+---------+
   Operation  | Use?  |Current  | Current |
  +-----------+-------+Format   | Range   |
1 |     +     | Yes   | Mixed   | 0 - 10  |
  +-----------+-------+---------+---------+
2 |     -     | Yes   | Mixed   | 0 - 10  |
  +-----------+-------+---------+---------+
3 |     x     | Yes   | Mixed   | 0 - 9   |
  +-----------+-------+---------+---------+
4 |     ÷     | Yes   | Mixed   | 1 - 9   |
  +-----------+-------+---------+---------+
5 |   Mixed   | Yes   | From    | From    |
  |(+,-,x,÷)  |       | Above   | Above   |
  +-----------+-------+---------+---------+

Enter setting to change (1-5)? █

        (Press RETURN when done.)
```



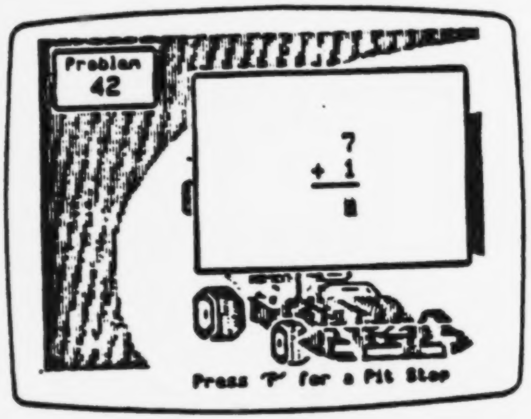
```
        Ms. Dehl (Blue)

Racing team members:

 1. Allen, Bryan          13. Vickers, N.
 2. Atchison, Pat         14. Wilson, Dawn
 3. Bates, Kristen        15. Young, Bryan
 4. Benson, Jenny
 5. Carsten, Terry
 6. Dahlman, Curt
 7. Gorman, Susan
 8. Hollister, J.
 9. Norberg, Jan
10. Perez, Patty
11. Stearns, Bill
12. Thompson, Shawn

What is your number? █
```



```
        The Big Race

Classes:

  1. Grade 3 (Group A)
  2. Grade 3 (Group B)
  3. Ms. Dahl (Blue)
  4. Mr. Allison
  5. Ms. Dahl (Red)

  6. [ None of the above ]
Which class are you in? █
```

SUGGESTIONS

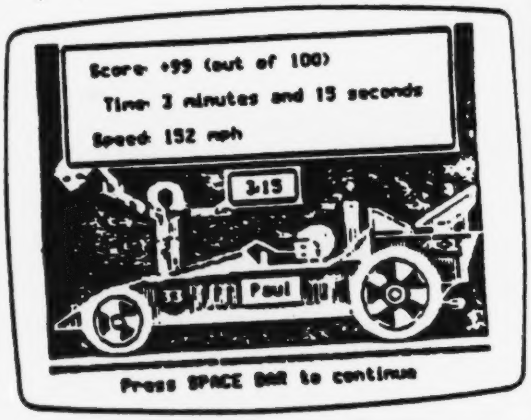
1. Since the race is quite long (100 problems), you might encourage students to pace themselves using the "pit stop" option. For variety, you could even form "racing teams" of two or three students that switch off after every twenty problems or so.
2. If you plan to use the program with one student, you might want to modify the number of problems to be presented in the teacher management options.
3. Encourage students to answer the problems quickly but emphasize the importance of getting correct answers.
4. If students are missing several facts, encourage them to review these facts by using PRACTICE LAPS, TUNE-UP TIME or regular flashcards.
5. Provide students with a chart or graph on which they can record their best speed for each practice session.
6. Post a list of various club members on the bulletin board.
7. D.T.A. Applications:
   - Warm-up
   - Independent Practice
   - Vocabulary: none
8. See the MECC manual for further information.



Problem 42

$$\begin{array}{r} 7 \\ +\ 1 \\ \hline 8 \end{array}$$

Press "P" for a Pit Stop

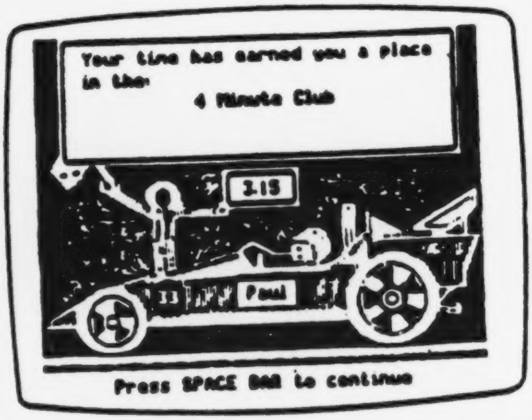


Score: 99 (out of 100)

Time: 3 minutes and 15 seconds

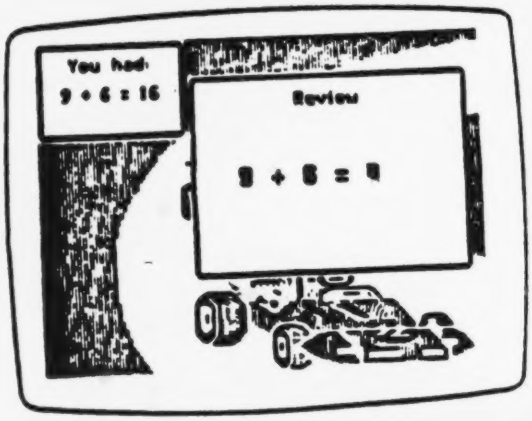
Speed: 152 mph

Press SPACE BAR to continue



Your time has earned you a place in the 4 Minute Club

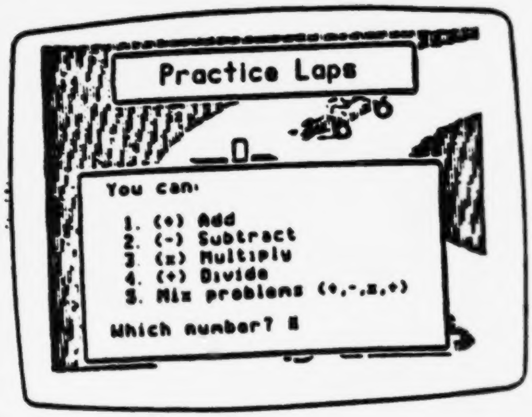
Press SPACE BAR to continue



You had:
9 + 6 = 16

Review

9 + 6 =



Practice Laps

You can:

1. (+) Add
2. (-) Subtract
3. (x) Multiply
4. (÷) Divide
5. Mix problems (+,-,x,÷)

Which number? ■

SOFTWARE SUMMARY

Company: MECC A-169
Title: SPEEDWAY MATH
Activity: PRACTICE LAPS

OBJECTIVES:

MFMT: 2.1.1 Add Whole Numbers
2.1.2 Subtract Whole Numbers
2.1.3 Multiply Whole Numbers
2.1.4 Divide Whole Numbers

SKILLS: A1 RECALL ADDITION NUMBER FACTS
S1 RECALL SUBTRACTION NUMBER FACTS
M1 RECALL MULTIPLICATION NUMBER FACTS
D1 RECALL DIVISION NUMBER FACTS

ACTIVITY SUMMARY

PRACTICE LAPS provides students with timed laps which consist of ten problems. Students can choose from the available operations and take as many laps as they wish. This program provides practice in quick recall of the following:

basic addition facts with sums up to 18
basic subtraction facts with minuends up to 18
basic multiplication facts with factors up to 12
basic division facts with divisors up to 12

The availability of the operations, the format of the problems presented, and the range of problem sizes are determined by pre-set teacher options. At the conclusion of each lap, a summary screen shows the lap, score, time, and speed. The speed is calculated on the basis of the actual time and the number of problems correct. For each incorrect response, the speed is reduced. Speeds in excess of 200 mph are attainable with practice. The student can then take another lap, stop and review any missed problems on the lap just completed, or change to another skill.

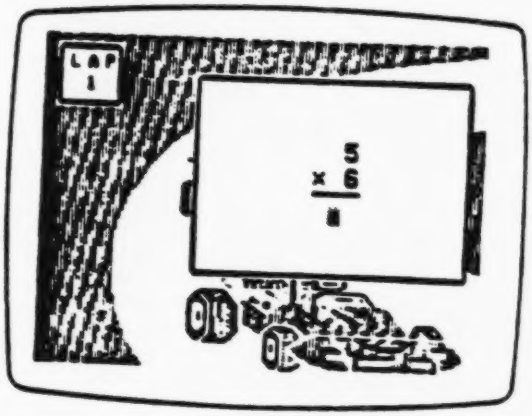
There is no sound used in this activity.

TEACHER OPTIONS

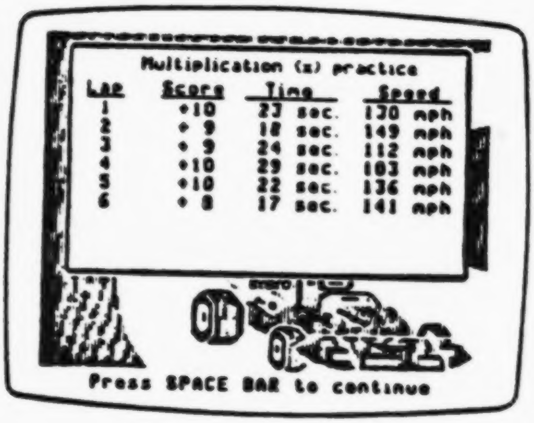
1. Press Control-A from the main menu to access the teacher management options.
   - A. Select the appropriate operation (+, -, x, --) you wish the students to work on.
   - B. Select the vertical format for problem format since that is the way problems are presented on the MFMT.
   - C. Problem ranges may be adjusted according to teacher specifications.

SUGGESTIONS

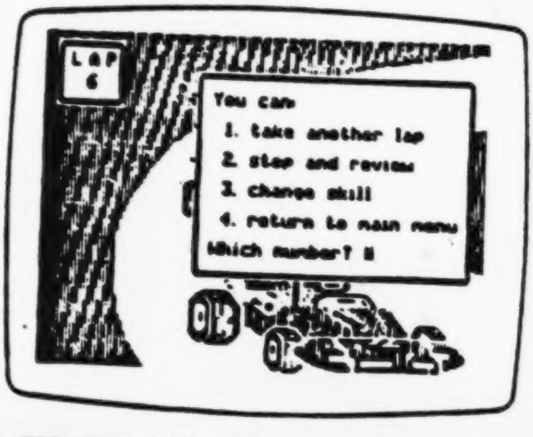
1. Encourage students to answer the problems quickly but emphasize the importance of getting correct answers.
2. If students are missing several facts, encourage them to review these facts by using the TUNE-UP TIME program or regular flashcards.
3. Provide students with a chart or graph on which they can record their best speed for each practice session.
4. D.T.A. Applications:
   Warm-up
   Independent Practice
   Vocabulary: none
4. See the MECC manual for further information.



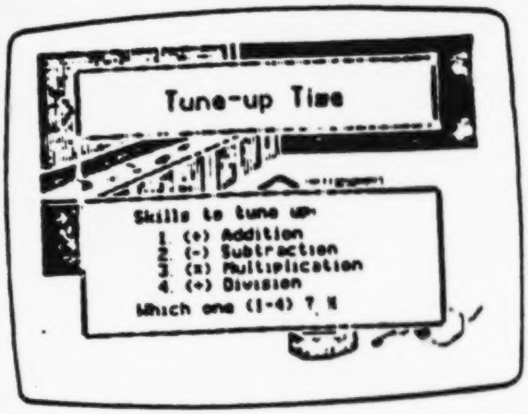
```
LAP
 1

      5
    x 6
    ---
      ■
```



```
     Multiplication (x) practice
Lap    Score    Time       Speed
 1      +10    23 sec.   130 mph
 2      + 9    18 sec.   149 mph
 3      + 9    24 sec.   112 mph
 4      +10    29 sec.   103 mph
 5      +10    22 sec.   136 mph
 6      + 8    17 sec.   141 mph

Press SPACE BAR to continue
```



```
LAP
 6

You can
 1. take another lap
 2. stop and review
 3. change skill
 4. return to main menu
Which number? ■
```



Tune-up Time

Skills to tune up:
1. (+) Addition
2. (-) Subtraction
3. (x) Multiplication
4. (÷) Division
Which one (1-4) ? N

SOFTWARE SUMMARY

Company: MECC : 169
Title: SPEEDWAY MATH
Activity: TUNE-UP TIME

OBJECTIVES:

MFMT: 2.1.1 Add Whole Numbers
2.1.2 Subtract Whole Numbers
2.1.3 Multiply Whole Numbers
2.1.4 Divide Whole Numbers

SKILLS: A1 RECALL ADDITION NUMBER FACTS
S1 RECALL SUBTRACTION NUMBER FACTS
M1 RECALL MULTIPLICATION NUMBER FACTS
D1 RECALL DIVISION NUMBER FACTS

ACTIVITY SUMMARY

TUNE-UP TIME simulates a set of traditional flashcards. The student selects the operation, the problem range, and the number of problems (up to 50). The program is not timed. It provides practice in:

- basic addition facts with sums up to 18
- basic subtraction facts with minuends up to 18
- basic multiplication facts with factors up to 12
- basic division facts with divisors up to 12

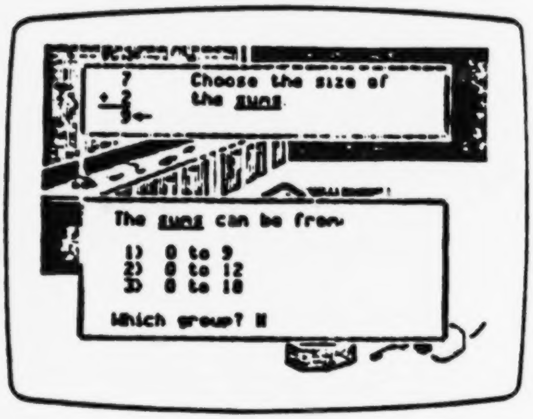
After answering each flashcard problem, the flashcard is placed in the appropriate pile, "Correct" or "Wrong." A very slight sound accompanies the placement in the "Correct" pile. Upon completing a set of problems, students can review the missed problems, do more of the same type, or change to a different type of problem.

TEACHER OPTIONS

1. The sound cannot be turned off, but it is so slight that it would never disrupt a class.
2. Press Control-A from the main menu to access the teacher management options.
   A. Select the appropriate operation (+, -, x, --) you wish the students to work on.
   B. Select the vertical format for problem format since that is the way problems are presented on the MFMT.
   C. Any problem ranges you might select in teacher options are ignored in TUNE-UP TIME so that students may select from the entire range.

SUGGESTIONS

1. Remind students that this program is not timed. Encourage them to write down the probems they miss so that they can study them later.
2. Have students work in pairs with decks of flashcards using the same procedure used in the program.
3. D.T.A. Applications:
   Warm-up
   Independent Practice
   Vocabulary: sum, minuend, factor, divisor
4. See the MECC manual for further information.

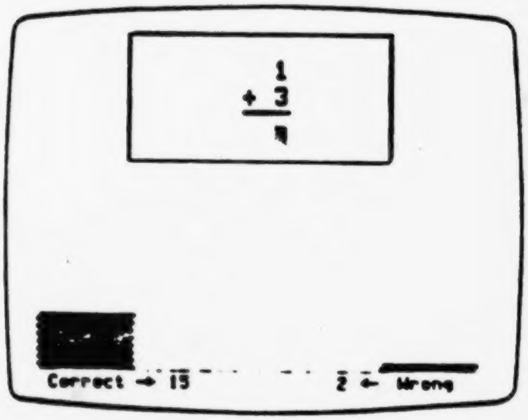


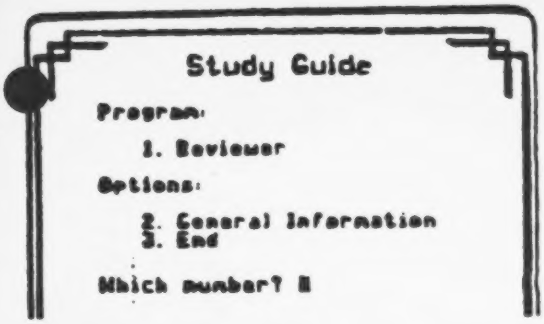
Choose the size of the sums.

The sums can be from

1) 0 to 9
2) 0 to 12
3) 0 to 18

Which group?





Study Guide

Program:

1. Reviewer

Options:

2. General Information
3. End

Which number? ■

SOFTWARE SUMMARY

Company: MECC A-126
Title: STUDY GUIDE
Activities: PLACE VALUE, MOVE DECIMAL POINT, RENAME PERCENTS, SMALLEST NUMBER, ORDER DECIMALS, MEASURE MAU2, MEASUREMENT, ELAPSED TIME, KEY WORDS I, KEY WORDS II, WHICH OPERATION I, WHICH OPERATION II, PERCENTS AS DECIMALS

OBJECTIVES:

MFMT 3.1.1 Write Numbers in Words and Digits
3.2.2 Choose an Appropriate Unit of Measure
5.1.6 Find Elapsed Time
5.1.2 Solve Money Problems Using Addition and Subtraction
5.1.3 Solve Money Problems Using Multiplication and Division
5.1.4 Solve Problems Using Percents

SKILLS:		
	N1	IDENTIFY PLACE VALUE
	PD2	IDENTIFY THE LEFT DIRECTION
	OD2	IDENTIFY THE SMALLEST IN A GROUP OF NUMBERS
	OD3	ARRANGE A GROUP OF NUMBERS FROM LEAST TO GREATEST
	MAU2	CHOOSE THE APPROPRIATE TYPE OF UNIT OF MEASURE FOR THE ATTRIBUTE
	MAU4	CHOOSE AN APPROPRIATE MAGNITUDE OF MEASURE
	MET *	FIND ELAPSED TIME * (MET 8, MET 9, MET 10)
	K1	SELECT KEY WORDS AND PHRASES IN A WORD PROBLEM
	K2	SELECT AN OPERATION FROM KEY WORDS AND PHRASES
	PD3	RENAME PERCENTS AS DECIMALS

NOTE: A special data disk with the activities listed under the ACTIVITY SUMMARY is required to cover the above skills.

ACTIVITY SUMMARY

Study Guide consists of three parts. DESIGNER enables you to create, edit, and store sets comprised of multiple-choice, matching, completion, and true-false questions. Questions may be organized by objectives and remedial feedback may be inserted for incorrect responses. REVIEWER is the part that allows students to interact with the questions you have created. If students miss a question, the question will be repeated later in the program. Assessment at the end of REVIEWER tells the number of questions requested, the number correct on the first try and the percentage correct. If a student does not reach mastery level, he will be asked to review this set of questions again. EXAMINER is the part that allows you to print tests or worksheets from the questions you have created. Since the DESIGNER and EXAMINER are designed for teacher use rather than student use, they are not listed on the main menu.

The following activities have been developed especially for this project. They are on a special data disk that is needed to run with the Study Guide program.

PLACE VALUE meets skill N1. It contains 40 multiple choice questions such as: Which digit is in the hundreds place? 612.98
A. 8 C. 2
B. 6 D. 1
Wrong answer feedback is not given.

MOVE DECIMAL POINT meets skill PD2. It contains 10 multiple choice questions such as: Move the decimal point two places to the LEFT for 18546.
A. 1.8546 C. 185.46
B. 18.546 D. 1854.6
Wrong answer feedback is not given.

RENAME PERCENTS meets skill PD3. It contains 20 multiple choice questions such as: Rename 86% as a decimal.
A. 86. C. .86
B. 8.6 D. .086
Wrong answer feedback is not given.

SMALLEST NUMBER meets skill OD2. It contains 20 multiple choice questions such as: Which is the smallest number?
A. 8.9 C. 17.8
B. 3.52 D. 23.07
Wrong answer feedback is given. Ex. 3 is the smallest whole number. .52 is only a part of 1.

ORDER DECIMALS meets skill OD3. It contains 10 multiple choice questions such as: Which group is in order from LEAST to GREATEST?
A. 42, 96.9, 185.6, 490.5
B. 96.9, 185.6, 490.5, 42
C. 185.6, 96.9, 490.5, 42
Wrong answer feedback is not given.

MEASURE MAU2 meets skill MAU2. It contains 25 multiple choice, true-false, and matching questions such as: Choose the appropriate unit of measure for volume.
A. kg C. cm
B. m3 D. km2
Wrong answer feedback is given. Ex. A unit of volume is always followed by the number 3.

NOTE: The program does not allow for m3 to be written as m^3. Please explain this to your students.

MEASUREMENT meets skill MAU4. It contains 25 multiple choice questions such as: The length of a paperclip would be best measured in

A. mm C. m
B. kg D. mL

Wrong answer feedback is given. Ex. A kg measures weight, a mL measures liquid capacity, and a meter (m) is much too long.

NOTE: The program does not allow for m3 to be written as m^3. Please explain this to your students.

ELAPSED TIME meets skills MET 8, 9, 10 It contains 20 multiple choice questions such as: Sheri put a cake in the oven at 2:50 p.m. If it takes 45 minutes to bake, when should she take it out of the oven?

A. 3:35 a.m. C. 2:55 p.m.
B. 3:35 p.m. D. 3:25 p.m.

Wrong answer feedback stresses the mathematical approach. Ex. 45 min. = :45; 2:50 + :45 = 2:95; :95 = 1 hr. (60 min.) & 35 min.; 2:00 + 1:35 = 3:35. It is still afternoon (p.m.).

* KEY WORDS I meets skill KW1 but should only be used with Objective 5.1.2, Solve Money Problems Using Addition and Subtraction. It contains 20 mutliple choice questions such as: What is the key word or phrase in this problem? Bill bought a comb for $3.00 and a toothbrush for $1.75. How much did he spend in all?

A. SPEND C. BILL
B. $3.00 D. IN ALL

Wrong answer feedback is given. Ex. "IN ALL" tells you to find to total or add.

* KEY WORDS II meets skill KW1 but should only be used with Objective 5.1.3, Solve Money Problems Using Multiplication and Division. It contains 10 multiple choice questions such as: What is the key word or phrase in this problem? Four friends went to an amusement park where they spent $59.44. If they split the cost equally, how much will each person pay?

A. EACH C. FOUR FRIENDS
B. SPENT D. $59.44

Wrong answer feedback is given. Ex. The key word "EACH" tells you to divide.

* NOTE: Before using either of these activities, be sure that your students understand that they are looking for the word or phrase that will help them decide which operation (add, subtract, multiply, or divide) they will need to perform to get the answer.

WHICH OPERATION I meets skill KW2. Since the answers are limited to addition or subtraction, you will probably want to use it in conjunction with Objective 5.1.2, Solve Money Problems Using Addition and Subtraction. It contains 20 multiple choice questions such as: How will you solve this problem? Steve saved $11.00. He bought a record for $5.00. How much money does he have left?

A. Mutliply	C. Add	E. Average
B. Divide	D. Subtract	

Wrong answer feedback is given. Ex. The key phrase "How much...left" tells you to find the difference or subtract.

WHICH OPERATION II meets skill KW2. Since the answers are limited to multiplication or division, you will probably want to use it in conjunction with Objective 5.1.3, Solve Money Problems Using Multiplication and Division. It contains 10 multiple choice questions such as: How will you solve this problem? If John earns $115.83 per week, how much will he earn in 52 weeks?

A. Mutliply	C. Add	E. Average
B. Divide	D. Subtract	

Wrong answer feedback is given. Ex. "How much" tells you to multiply.

PERCENTS AS DECIMALS meets skill PD3 but should only be used under Objective 5.1.4, Solve Problems Using Percents, since it is set up to deal with percents as decimals in word problems. It contains 5 multiple choice questions such as: Write the % as a decimal in this word problem. The Booster Club received 50% of all sales at their last fundraiser. If they sold $435.00 worth of merchandise, how much did they raise?

A. 453.00	C. 5.0
B. 4.53	D. .50

Wrong answer feedback is given. Ex. 50% = .50 Replace the % with a decimal. Move the decimal 2 places to the left.

TEACHER OPTIONS

Press CONTROL-A from the main menu to access the teacher management options.

A. If you wish to see student records, choose DESIGNER from the Management Options Menu, and then take option 3, "See student records."

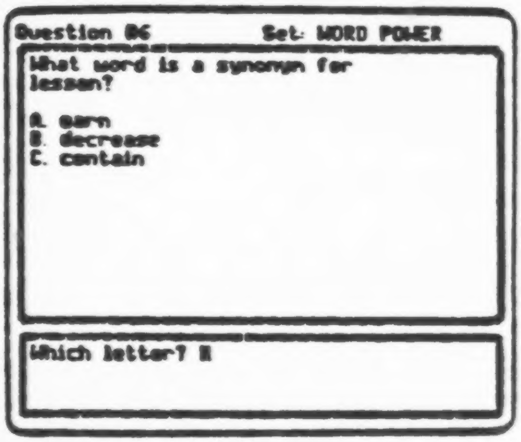
B. If you wish to create, edit, or delete existing sets of questions, choose DESIGNER from the Management Options Menu. (See the manual for more information on how to create question sets if you do not understand what to do.)

C. To print tests or worksheets, choose EXAMINER from the Management Options Menu. You may create different versions of the same test.

D. Diskette support from the Management Options Menu allows you to select one or two disk drives, create a data diskette, or copy a data diskette.

SUGGESTIONS

1. If you are not sure whether the program is set for 1 or 2 disk drives, access the Management Options Menu with CONTROL-A and choose Diskette Support. Set the program according to the number of disk drives that you have.
2. Instruct students to choose #1 "REVIEWER" from the main menu and then the activity you want them to do on the data diskette. Also tell them how many questions you expect them to do.
3. In using the Key Words and Which Operation activities that deal with multiplication and addition, you might tell students to look at the numbers in the problems. Key words such as total, in all, and altogether can indicate either addtion or multiplication. Looking at the numbers may help students determine whether addition is needed (if the numbers are the same units--money, items, etc.) or whether multiplication is needed (if the numbers are of different units--money and items).
4. D.T.A. Applications:
   Warm-up
   Independent Practice
   Vocabulary: See examples from individual activities.
5. See the MECC manual for further information.

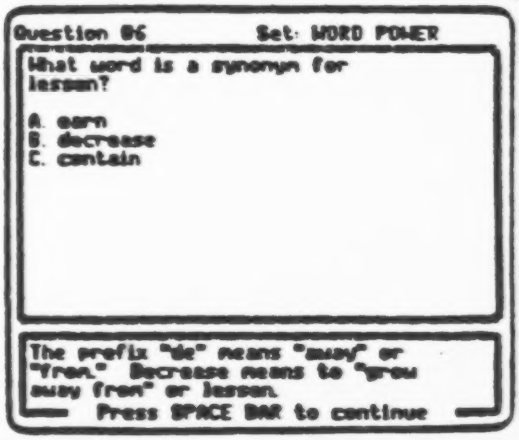


Question 06 Set: WORD POWER

What word is a synonyn for lessen?

A. earn
B. decrease
C. contain

Which letter? B



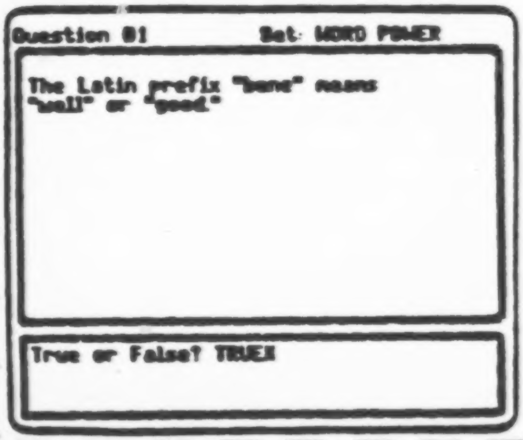
Question 06 Set: WORD POWER

What word is a synonyn for lessen?

A. earn
B. decrease
C. contain

The prefix "de" means "away" or "from." Decrease means to "grow away from" or lessen.

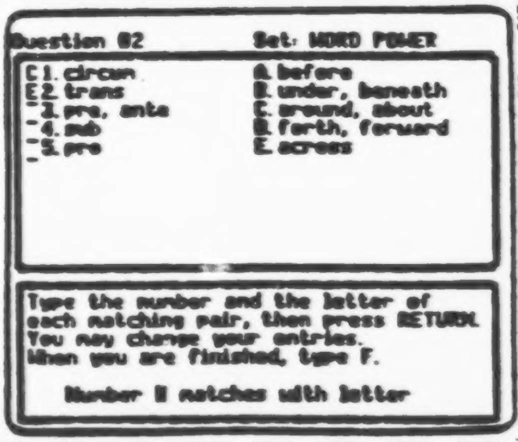
Press SPACE BAR to continue



Question 01 Set: WORD POWER

The Latin prefix "bene" means "well" or "good."

True or False? TRUE



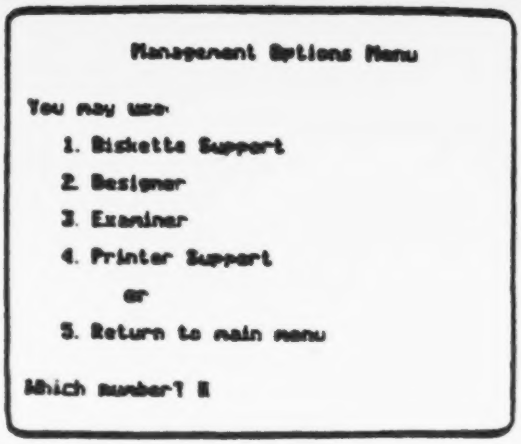
Question 02 Set: WORD POWER

C 1. circum
E 2. trans
_ 3. pre, ante
_ 4. sub
_ 5. pro

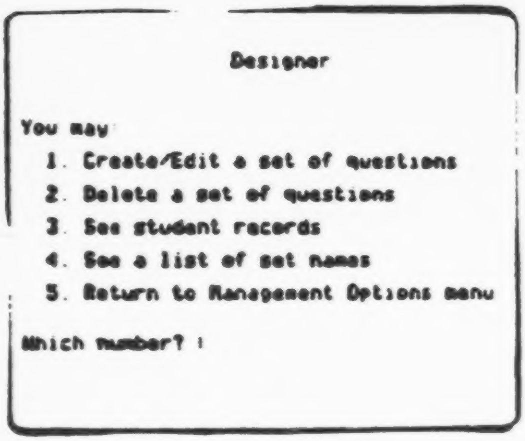
A. before
B. under, beneath
C. around, about
D. forth, forward
E. across

Type the number and the letter of each matching pair, then press RETURN. You may change your entries. When you are finished, type F.

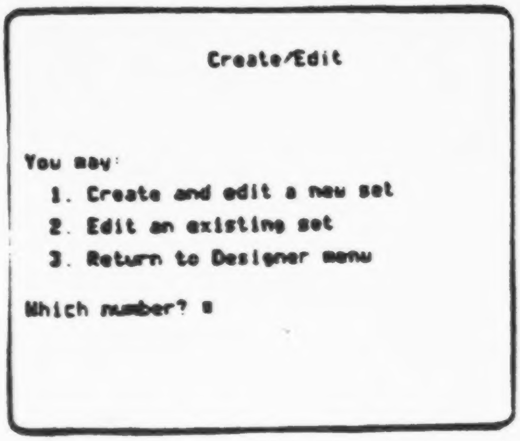
Number matches with letter



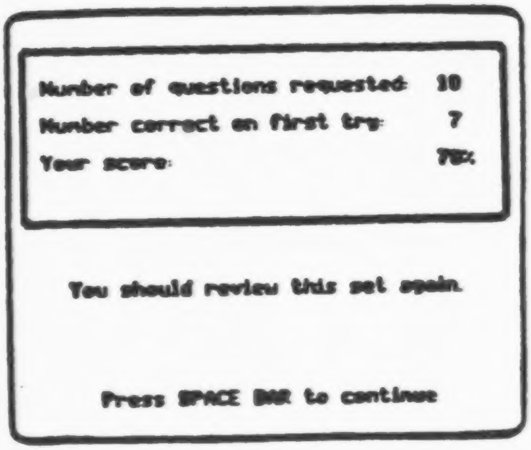
```
Management Options Menu

You may use:
   1. Diskette Support
   2. Designer
   3. Examiner
   4. Printer Support
        or
   5. Return to main menu

Which number? █
```



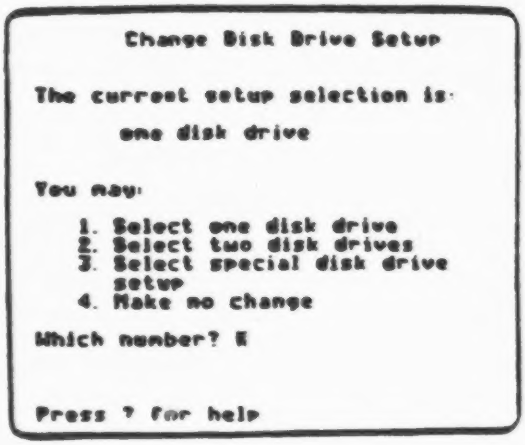
```
Designer

You may:
  1. Create/Edit a set of questions
  2. Delete a set of questions
  3. See student records
  4. See a list of set names
  5. Return to Management Options menu

Which number? ▌
```



```
Create/Edit

You may:
  1. Create and edit a new set
  2. Edit an existing set
  3. Return to Designer menu

Which number? █
```



```
Number of questions requested:  10
Number correct on first try:     7
Your score:                    70%

You should review this set again.

Press SPACE BAR to continue
```



```
Change Disk Drive Setup

The current setup selection is:
     one disk drive

You may:
   1. Select one disk drive
   2. Select two disk drives
   3. Select special disk drive
      setup
   4. Make no change

Which number? █

Press ? for help
```

GREAT!
You made it to Paris.
Press SPACE BAR to continue

SOFTWARE SUMMARY

Company: MECC A-146
Title: SUBTRACTION PUZZLES
Activity: BALLOON TRIP

OBJECTIVES:

MFMT 2.1.2 Subtract Whole Numbers
SKILLS: S4 SUBTRACT TWO NUMBERS WITH UP TO 2 DIGITS EACH, REGROUPING TENS TO ONES
S5 SUBTRACT TWO NUMBERS WITH UP TO 3 DIGITS EACH, REGROUPING TENS TO ONES
S6 SUBTRACT TWO NUMBERS WITH UP TO 3 DIGITS EACH, REGROUPING HUNDREDS TO TENS

ACTIVITY SUMMARY

BALLOON TRIP is a review of all the activities in Subtraction Puzzles in a timed drill format. Graphic reinforcement is provided by a balloon trip from New York to Paris. The amount of time allowed to complete each problem can be set in the teacher management options. If the graphics are turned off, the drill is not timed.

Twenty randomly generated problems are presented in the vertical format. Students must press 'R' if they wish to regroup. Students are given as many chances as needed to answer a problem correctly within the time allotted. If they answer incorrectly on the second try (for untimed drill) or after the allotted time (timed drill), help is provided by requiring regrouping and highlighting the columns to be subtracted. The problem must be answered correctly before proceeding to the next problem.

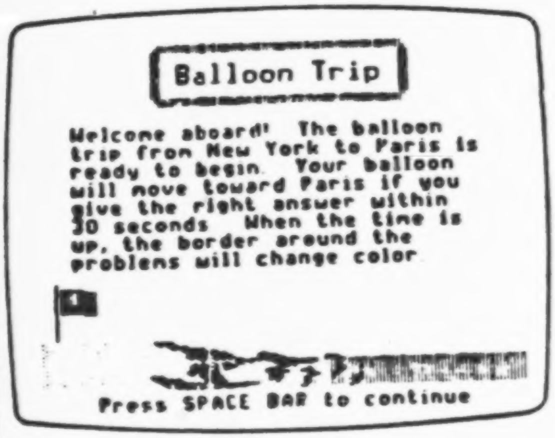
Students receive a score at the end of the lesson. They are congratulated if they score at or above the mastery level. The mastery level is set at 90% of 20 problems. If they score below the mastery level, they are encouraged to repeat the program.

TEACHER OPTIONS

1. Number 7 from the main menu is used to turn the sound on or off.
2. Press Control-A from the main menu to access the teacher management options.
   - A. Number 1 "Turn graphics off" removes the graphic reinforcement and makes the activity untimed.
   - B. Number 2 "Set review time" allows you to change the amount of time for completing each problem from a minimum of 2 seconds to a maximum of 255 seconds. The default setting is 30 seconds.
   - C. Number 3 "See names and scores" allows you to print student scores or view them on the screen.
   - D. Number 4 allows you to "Clear names and scores." (100 scores may be saved. After that, the oldest score is removed each time a new score is entered.)
   - E. Number 6 allows you to specify whether you want regroup, rename, or borrow used in the problems. It also tells you what the current setting is.

SUGGESTIONS

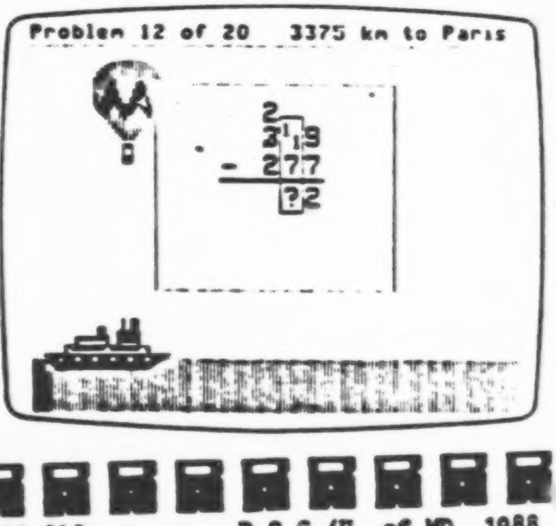
1. The teacher will have to use his/her own judgment as to the appropriate timing for this review drill and whether he/she feels the balloon graphics are appropriate.
4. D.T.A. Applications:
   Warm-Up
   Guided Practice
   Independent Practice
   Vocabulary: regroup, rename, borrow
5. See the MECC manual for further information.



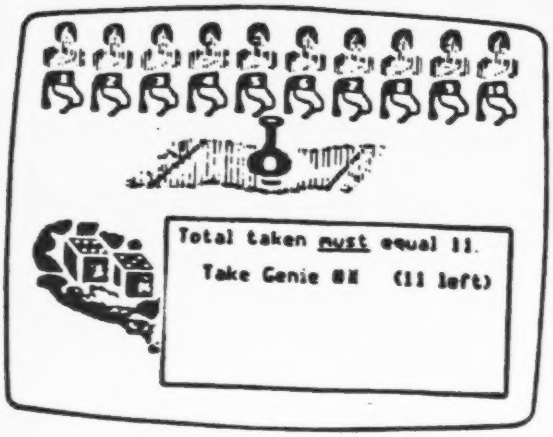
Balloon Trip

Welcome aboard! The balloon trip from New York to Paris is ready to begin. Your balloon will move toward Paris if you give the right answer within 30 seconds. When the time is up, the border around the problems will change color.

Press SPACE BAR to continue



Problem 12 of 20   3375 km to Paris



Total taken must equal 11.

Take Genie #X (11 left)

SOFTWARE SUMMARY

Company: MECC A-146
Title: SUBTRACTION PUZZLES
Activity: MAGIC CARPET

OBJECTIVES:

MFMT 2.1.2 Subtract Whole Numbers
SKILL: S6 SUBTRACT TWO NUMBERS WITH UP TO 3 DIGITS EACH, REGROUPING HUNDREDS TO TENS

ACTIVITY SUMMARY

Subtraction Puzzles is set up so that the student does five problems and then is allowed to play a game. In MAGIC CARPET, students will receive practice in:

subtracting a 3-digit number from a 3-digit number with a regroup in the tens place	358 -264
subtracting a 2-digit number from a 3-digit number with a regroup in the tens place	215 - 22

Twenty randomly generated problems are presented in the vertical format. Students must press 'R' if they wish to regroup. Students are given two opportunities to answer a problem correctly. If they answer incorrectly on the second try, help is provided by requiring regrouping and highlighting the columns to be subtracted. The problem must be answered correctly before proceeding to the next problem.

Students receive a score at the end of the lesson. They are congratulated if they score at or above the mastery level. The mastery level is set at 80% of 20 problems. If they score below the mastery level, they are encouraged to repeat the program.

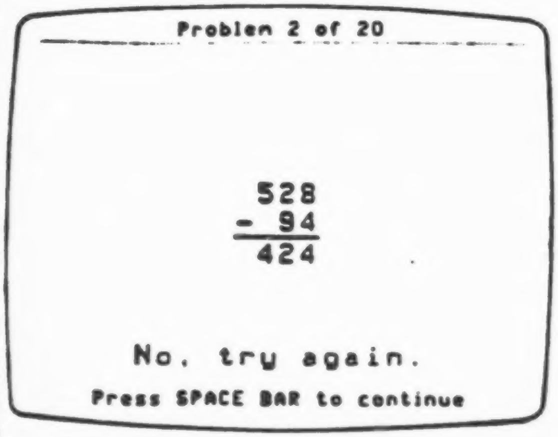
The object of the game MAGIC CARPET is to place all the genies in the bottle. Each genie has a point value of one to ten. The dice shown determine which genies can be placed in the bottle. The entire total shown on the dice must be used, or the game is over.

TEACHER OPTIONS

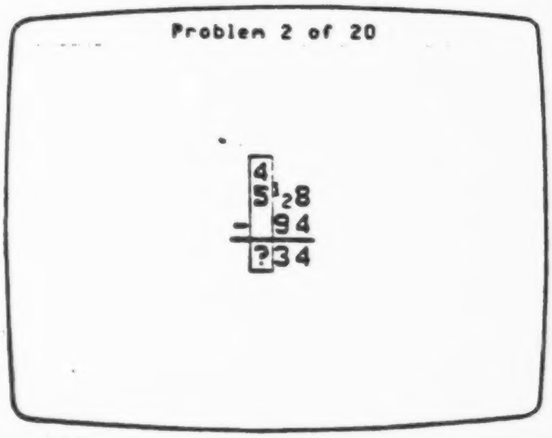
1. Option 7 from the main menu is used to turn the sound on or off.
2. Press Control-A from the main menu to access the teacher management options.
    - A. Number 1 "Turn graphics off" will remove the games from the activities so that the student is not allowed to play any games.
    - B. Number 3 "See names and scores" allows you to print student scores or view them on the screen.
    - C. Number 4 allows you to "Clear names and scores." (100 scores may be saved. After that, the oldest score is removed each time a new score is entered.)
    - D. Number 6 allows you to specify whether you want <u>regroup</u>, <u>rename</u>, or <u>borrow</u> used in the problems. It also tells you what the current setting is.

SUGGESTIONS

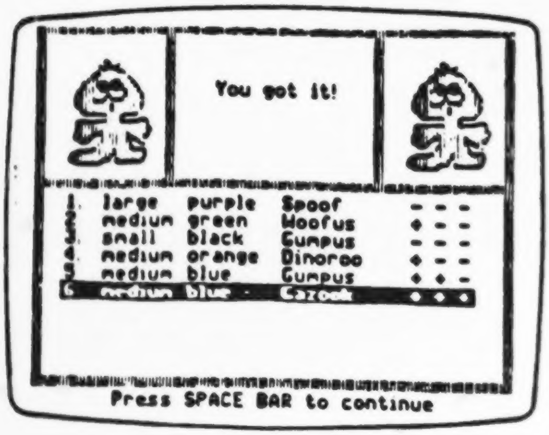
1. If the student is playing the game for the first time, he should choose option number 3 "See instructions" before choosing option number 2 "Play 'MAGIC CARPET.'"
2. The game may take too long to play. If the teacher feels it does, the graphics should be turned off in the management options so that the student is not allowed to play the game.
3. If the problems are too easy, press Escape twice to go on to the next activity, BALLOON TRIP.
4. D.T.A. Applications:
    - Warm-Up
    - Guided Practice
    - Independent Practice
    - Vocabulary: regroup, rename, borrow
5. See the MECC manual for further information.



```
Problem 2 of 20

  528
-  94
  424

No, try again.
Press SPACE BAR to continue
```



```
Problem 2 of 20

  4
  5¹28
-  94
  ?34
```



```
You got it!

1. large   purple Spoof    - - -
2. medium  green  Woofus   ◆ - -
3. small   black  Gumpus   - - -
4. medium  orange Dinoroo  ◆ - -
5. medium  blue   Gumpus   ◆ ◆ -
6. medium  blue - Cazook   ◆ ◆ ◆

Press SPACE BAR to continue
```

SOFTWARE SUMMARY

Company: MECC A-146
Title: SUBTRACTION PUZZLES
Activity: NAME THAT CREATURE

OBJECTIVES:

MFMT 2.1.2 Subtract Whole Numbers
SKILL: S4 SUBTRACT TWO NUMBERS WITH UP TO 2 DIGITS EACH, REGROUPING TENS TO ONES

ACTIVITY SUMMARY

Subtraction Puzzles is set up so that the student does five problems and then is allowed to play a game. In NAME THAT CREATURE, students will receive practice in:

subtracting a 1-digit number from a 2-digit number with one regroup $\begin{array}{r}43\\ \underline{-\ 7}\end{array}$

subtracting a 1-digit number from a 2-digit multiple of 10 with one regroup $\begin{array}{r}80\\ \underline{-\ 5}\end{array}$

Twenty randomly generated problems are presented in the vertical format. Students must press 'R' if they wish to regroup. Students are given two opportunities to answer a problem correctly. If they answer incorrectly on the second try, help is provided by requiring regrouping and highlighting the columns to be subtracted. The problem must be answered correctly before proceeding to the next problem.

Students receive a score at the end of the lesson. They are congratulated if they score at or above the mastery level. The mastery level is set at 90% of 20 problems. If they score below the mastery level, they are encouraged to repeat the program.

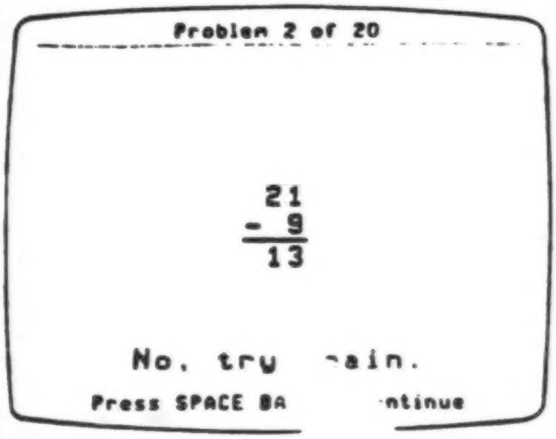
The object of the game NAME THAT CREATURE is to name a creature using clues given.

TEACHER OPTIONS

1. Option 7 from the main menu is used to turn the sound on or off.
2. Press Control-A from the main menu to access the teacher management options.
   - A. Number 1 "Turn graphics off" will remove the games from the activities so that the student is not allowed to play any games.
   - B. Number 3 "See names and scores" allows you to print student scores or view them on the screen.
   - C. Number 4 allows you to "Clear names and scores." (100 scores may be saved. After that, the oldest score is removed each time a new score is entered.)
   - D. Number 6 allows you to specify whether you want regroup, rename, or borrow used in the problems. It also tells you what the current setting is.

SUGGESTIONS

1. If the student is playing the game for the first time, he should choose option number 3 "See instructions" before choosing option number 2 "Play 'NAME THAT CREATURE.'"
2. The game may take too long to play. If the teacher feels it does, the graphics should be turned off in the management options so that the student is not allowed to play the game.
3. If the problems are too easy, press Escape twice to go on to the next activity, SPACE PEGS.
4. D.T.A. Applications:
   - Warm-Up
   - Guided Practice
   - Independent Practice
   - Vocabulary: regroup, rename, borrow
5. See the MECC manual for further information.

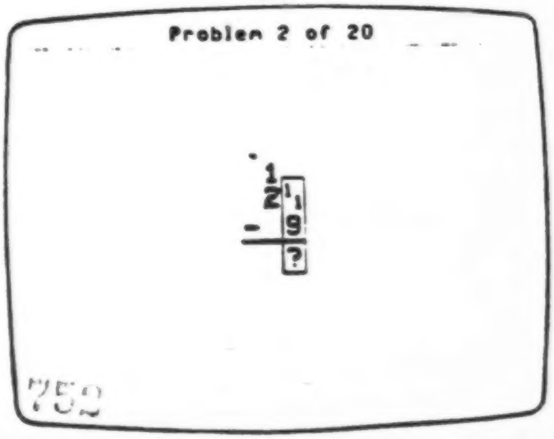


Problem 2 of 20

$$\begin{array}{r} 21 \\ -\ 9 \\ \hline 13 \end{array}$$

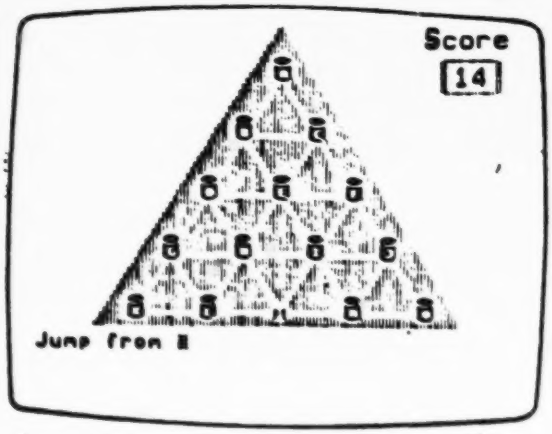
No, try -ain.

Press SPACE BA -ntinue



Problem 2 of 20

$$\begin{array}{r} \overset{1}{2}\,\boxed{^{1}1} \\ -\ \boxed{9} \\ \hline \boxed{?} \end{array}$$



SOFTWARE SUMMARY

Company: MECC A-146
Title: SUBTRACTION PUZZLES
Activity: SPACE PEGS

OBJECTIVES:

MFMT 2.1.2 Subtract Whole Numbers
SKILLS: S4 SUBTRACT TWO NUMBERS WITH UP TO 2 DIGITS EACH, REGROUPING TENS TO ONES

ACTIVITY SUMMARY

Subtraction Puzzles is set up so that the student does five problems and then is allowed to play a game. In SPACE PEGS, students will receive practice in:

subtracting a 2-digit number from a 2-digit number with one regroup

$$\begin{array}{r} 57 \\ \underline{-39} \end{array}$$

subtracting a 2-digit number from a 2-digit multiple of 10 with one regroup

$$\begin{array}{r} 40 \\ \underline{-32} \end{array}$$

Twenty randomly generated problems are presented in the vertical format. Students must press 'R' if they wish to regroup. Students are given two opportunities to answer a problem correctly. If they answer incorrectly on the second try, help is provided by requiring regrouping and highlighting the columns to be subtracted. The problem must be answered correctly before proceeding to the next problem.

Students receive a score at the end of the lesson. They are congratulated if they score at or above the mastery level. The mastery level is set at 90% of 20 problems. If they score below the mastery level, they are encouraged to repeat the program.

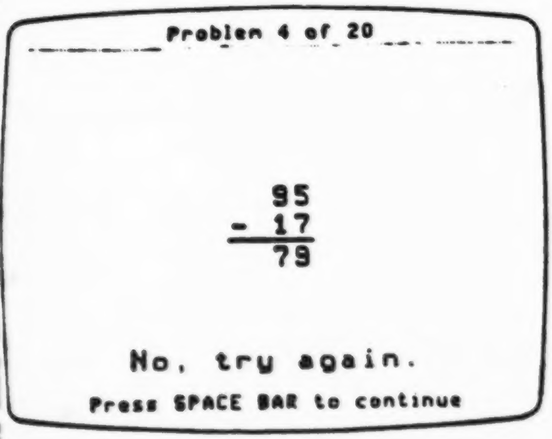
The object of the game SPACE PEGS is to try to remove all but one of the pegs by jumping over one peg at a time.

TEACHER OPTIONS

1. Number 7 from the main menu is used to turn the sound on or off.
2. Press **Control-A** from the main menu to access the teacher management options.
   A. Number 1 "Turn graphics off" will remove the games from the activities so that the student is not allowed to play any games.
   B. Number 3 "See names and scores" allows you to print student scores or view them on the screen.
   C. Number 4 allows you to "Clear names and scores." (100 scores may be saved. After that, the oldest score is removed each time a new score is entered.)
   D. Number 6 allows you to specify whether you want regroup, rename, or borrow used in the problems. It also tells you what the current setting is.

SUGGESTIONS

1. If the student is playing the game for the first time, he should choose option number 3 "See instructions" before choosing option number 2 "Play SPACE PEGS."
2. The game may take too long to play. If the teacher feels it does, the graphics should be turned off in the management options so that the student is not allowed to play the game.
3. If the problems are too easy, press **Escape** twice to go on to the next activity, TRACE.
4. D.T.A. Applications:
   Warm-Up
   Guided Practice
   Independent Practice
   Vocabulary: regroup, rename, borrow
5. See the MECC manual for further information.

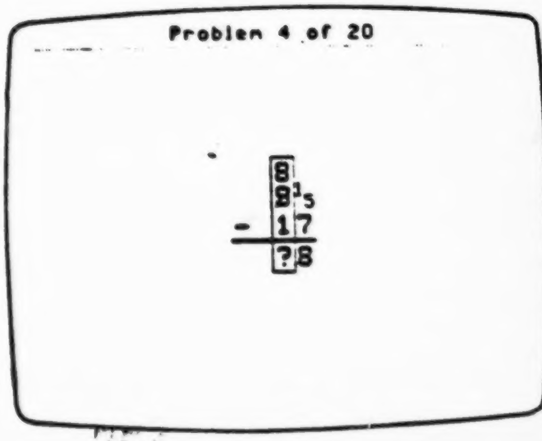


Problem 4 of 20

$$\begin{array}{r} 95 \\ -\ 17 \\ \hline 79 \end{array}$$

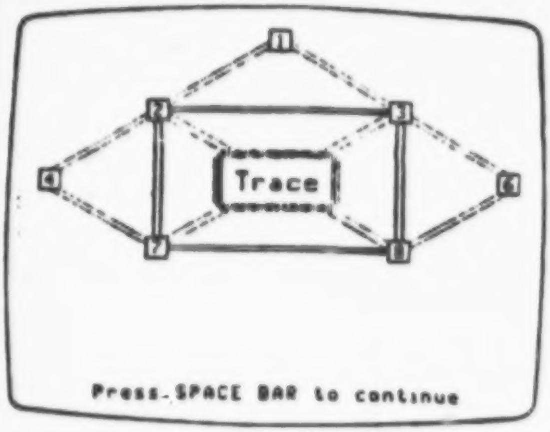
No, try again.

Press SPACE BAR to continue



Problem 4 of 20

$$\begin{array}{r} 8 \\ \cancel{9}^1 5 \\ -\ 17 \\ \hline ?8 \end{array}$$



Press SPACE BAR to continue

SOFTWARE SUMMARY

Company: MECC A-146
Title: SUBTRACTION PUZZLES
Activity: TRACE

OBJECTIVES:

MFMT 2.1.2 Subtract Whole Numbers
SKILLS: S4 SUBTRACT TWO NUMBERS WITH UP TO 2 DIGITS EACH, REGROUPING TENS TO ONES
S5 SUBTRACT TWO NUMBERS WITH UP TO 3 DIGITS EACH, REGROUPING TENS TO ONES

ACTIVITY SUMMARY

Subtraction Puzzles is set up so that the student does five problems and then is allowed to play a game. In TRACE, students will receive practice in:

subtracting a 2-digit number from a 2-digit number with one regroup

$$\begin{array}{r}57\\-39\\\hline\end{array}$$

subtracting a 2-digit number from a 2-digit multiple of 10 with one regroup

$$\begin{array}{r}40\\-32\\\hline\end{array}$$

subtracting a 3-digit number from a 3-digit number with one regroup to the unit place

$$\begin{array}{r}567\\-428\\\hline\end{array}$$

Twenty randomly generated problems are presented in the vertical format. Students must press 'R' if they wish to regroup. Students are given two opportunities to answer a problem correctly. If they answer incorrectly on the second try, help is provided by requiring regrouping and highlighting the columns to be subtracted. The problem must be answered correctly before proceeding to the next problem.

Students receive a score at the end of the lesson. They are congratulated if they score at or above the mastery level. The mastery level is set at 90% of 20 problems. If they score below the mastery level, they are encouraged to repeat the program.

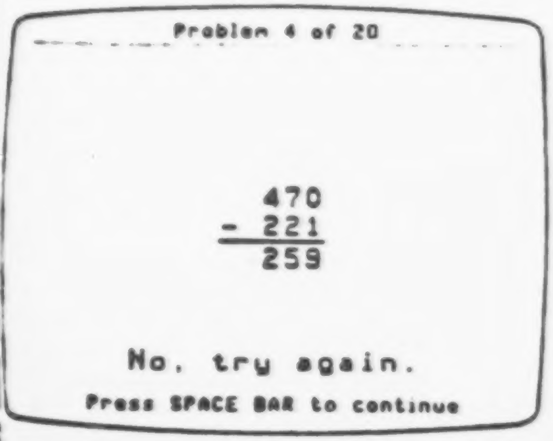
The object of the game TRACE is to trace a figure with a continuous line and without retracing any line.

TEACHER OPTIONS

1. Option 7 from the main menu is used to turn the sound on or off.
2. Press Control-A from the main menu to access the teacher management options.
   - A. Number 1 "Turn graphics off" will remove the games from the activities so that the student is not allowed to play any games.
   - B. Number 3 "See names and scores" allows you to print student scores or view them on the screen.
   - C. Number 4 allows you to "Clear names and scores." (100 scores may be saved. After that, the oldest score is removed each time a new score is entered.)
   - D. Number 6 allows you to specify whether you want regroup, rename, or borrow used in the problems. It also tells you what the current setting is.

SUGGESTIONS

1. If the student is playing the game for the first time, he should choose option number 3 'See instructions' before choosing option number 2 "Play 'TRACE.'"
2. The game may take too long to play. If the teacher feels it does, the graphics should be turned off in the management options so that the student is not allowed to play the game.
3. If the problems are too easy, press **Escape** twice to go on to the next activity, MAGIC CARPET.
4. D.T.A. Applications:
   Warm-Up
   Guided Practice
   Independent Practice
   Vocabulary: regroup, rename, borrow
5. See the MECC manual for further information.

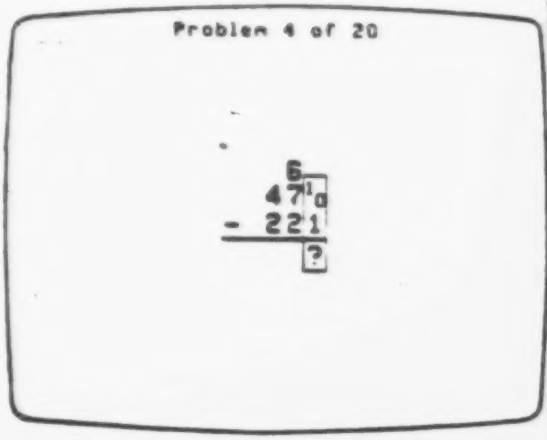


Problem 4 of 20

470
- 221
259

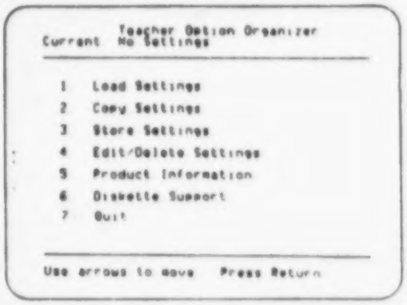
No, try again.

Press SPACE BAR to continue



Problem 4 of 20

$$\begin{array}{r} \overset{6}{\cancel{7}} \\ 4\,\cancel{7}\,{}^{1}0 \\ -\ 2\ 2\ 1 \\ \hline \boxed{?} \end{array}$$



```
          Teacher Option Organizer
Current  No Settings
_______________________________________

   1   Load Settings
   2   Copy Settings
   3   Store Settings
   4   Edit/Delete Settings
   5   Product Information
   6   Diskette Support
   7   Quit

_______________________________________
Use arrows to move   Press Return
```

SOFTWARE SUMMARY

Company: MECC A-242
Title: TEACHER OPTION ORGANIZER

TEACHER UTILITY PROGRAM

NOTE: DOES NOT RUN ON THE APPLE II+

ACTIVITY SUMMARY

Teacher Option Organizer quickly copies teacher option settings. It works with all of the modifiable* MECC software programs that are used for this project. It can also clear high score lists as the settings are copied, but it does not affect student records that are saved on the diskette. Up to 50 settings can be saved.

When the Teacher Option Organizer is first booted, it checks to see whether you have a one or two disk drive system so that you do not need to use the diskette support unless you want to specify another setup.

The Teacher Option Organizer cannot be loaded onto a network, nor can it access programs that have been loaded onto a network.

*Speedway Math allows settings to be loaded and copied only. Settings cannot be stored. Also, Speedway Math will not clear the Hall of Fame list.

DIRECTIONS

To copy options from a program disk onto the Teacher Option Organizer:

1. First boot the program (for example, Multiplication Puzzles) from which you wish to copy the settings. Use Control-A to access the teacher options and adjust the settings as you desire.
2. Exit teacher options and return to Main Menu. Choose quit and boot Teacher Option Organizer.
3. In Teacher Option Organizer, choose Load Settings. Then choose #1. Load from Product. Insert the math program disk and press the Space Bar. Once the math program options have been loaded, "Current" at the top of the screen will name the math product for which settings have been loaded.
4. You now have the choice of copying settings onto other disks or storing the setting onto the Teacher Option Organizer disk. If you choose to store the settings, you will be asked to type in a name for those settings. Type a name, remove the math program disk, and insert the Teacher Option Organizer.

To copy options onto the math program disks from stored settings:

1. Boot the <u>Teacher Option Organizer</u>.
2. Choose Load Settings. Then choose #2. Load Stored Settings. Programs and settings are listed alphabetically. Find the program and setting you wish to use and highlight it by moving the arrow keys. Press Return.
3. Once the settings have been loaded, choose #1 Copy Settings and follow the directions.

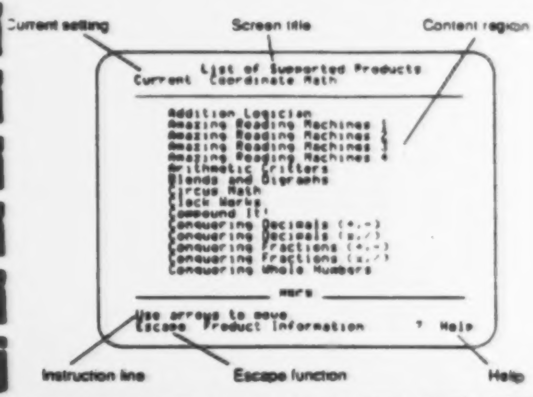
To edit/delete settings on the <u>Teacher Option Organizer</u>:

1. Boot the <u>Teacher Option Organizer</u> and choose #4. Edit/Delete Settings.
2. To edit the settings, choose #1. Rename Stored Settings. Find the program and setting you wish to rename and enter the new name as requested.
3. To delete the settings, choose #2. Delete Stored Settings. Find the program and setting you wish to delete. The program will ask you if you want to permanently delete these settings. Say yes if you do. When you have finished deleting all the settings you wish to delete, press Escape.

SUGGESTIONS

1. Think of a consistent way to name your settings. You might name them from A to Z with A being the easiest levels and Z the hardest. If more than one teacher is using the Organizer, add a prefix with the first few letters of your name so that you can identify your settings. Add other letters to code whether games are on or off such as G (game) or NG (no game).
2. Keep a list of the programs and settings with an explanation of what modifications the setting contains.
3. Do not modify disks when one disk is being used on a network system unless you want the entire class to work with the same modifications.

The diagram below shows the major screen elements and active keys featured in *Teacher Option Organizer*.



```
              List of Supported Products
Current  Coordinate Math
______________________________________________
      Addition Logician
      Amazing Reading Machines 1
      Amazing Reading Machines 2
      Amazing Reading Machines 3
      Amazing Reading Machines 4
      Arithmetic Critters
      Blends and Digraphs
      Circus Math
      Clock Works
      Compound It!
      Conquering Decimals (+,-)
      Conquering Decimals (x,/)
      Conquering Fractions (+,-)
      Conquering Fractions (x,/)
      Conquering Whole Numbers
____________________ more ____________________
Use arrows to move
Escape  Product Information          ?  Help
```

- The **current setting** allows you to see which setting is currently loaded and the product to which it applies.
- The **screen title** shows where you are in the program or which option you are working with.
- The **content region** is the working area of the screen. This is where you see the Organizer's menus and where you make your selections.
- The **instruction line** indicates what you can do on this screen and what effect pressing the Return Key will have.
- The **escape function** shows you what effect pressing the Escape Key will have.
- **Help** is available when the ? is displayed.

Record of Current Settings Stored on *Teacher Option Organizer*

	Setting Name	MECC Product	Additional Information
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
13.			
14.			
15.			
16.			
17.			
18.			
19.			
20.			

Company: MICROCOMPUTER
WORKSHOPS
Title: MULTIPLY FRACTIONS
Activity: MULTIPLY FRACTIONS

SOFTWARE SUMMARY

OBJECTIVES:

This program does not meet the requirements of the MFMT. A summary has been included in case teachers are using the whole software series.

ACTIVITY SUMMARY

MULTIPLYING FRACTIONS is designed to assist students in learning how to multiply fractions by providing them with comprehensive instruction and structure.

To begin MULTIPLYING FRACTIONS press number one at the main menu. The students are required to type their first name. They are next asked if they want instructions? If they press "Y" the program gives a lengthy explanation of the program. The instructions include a sample problem.

If "N" is pressed the program immediately moves to the problem selection menu. The students select the number of problems that they wish to complete. They can choose any amount from 1-999. If they pick an unsually high number the program will ask "Do you really want to do 999 problems?"

The problems are randomly presented in horizontal format. The screen is separated into thirds. The top window or third is the Original Problem. The center window is the "Work Area". This is where the student works on reducing, canceling and computation.

The bottom window is the options section. The student can choose:

1) Cancel or reduce
2) Multiply

If number one is selected the student is prompted to type in two numbers to be cancelled or reduced. They are prompted to enter the replacement for each of these numbers. This process will continue until all possible numbers are reduced.

The next step is to multiply. The students are prompted to enter the product of the numerators, then the product of the denominators. If the answer is an improper fraction, they are asked to enter in the whole number equivalent.

At the end of each set of problems the student receives a total error analysis which tells how many errors there were in the procedure and in the computation. The student can press "S" to stop at the beginning or end of a problem.

TEACHER OPTIONS

The program has an extensive Data Management System that allows the teacher to keep a record of classes, students, class and student profiles, grade plot and rank of student. These options are accessed via three DMS menus: Main Menu, Class Menu and Ranking Menu.

See page 7 of the Data Management System manual for the initial password to get into the system.

There are no options for setting the difficulty level in the fraction series.

SUGGESTIONS

1. Review the instructions with the students and explain the procedure. Program commands are always visible on screen.
2. D.T.A. Applications:
   Guided Practice
   Independent Practice
   Vocabulary: numerator
   denominator
   cancel
   reduce
   procedure
   computation

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SOFTWARE SUMMARY

Company: MICROCOMPUTER WORKSHOPS
Title: ADDING FRACTIONS
Activity: ADDING FRACTIONS

OBJECTIVES:

MFMT: 2.1.5 ADDING FRACTIONS

SKILLS: A1 FIND A COMMON DENOMINATOR OR LOWEST COMMON DENOMINATOR
A4 ADD FRACTIONS WITH UNLIKE DENOMINATORS
A6 ADD MIXED NUMBERS WITH UNLIKE DENOMINATORS

ACTIVITY SUMMARY

ADDING FRACTIONS is designed to assist students in learning how to add fractions by providing them with comprehensive instruction and structure.

To begin ADDING FRACTIONS press number one at the main menu.
The students are required to type their first name.
They are next asked if they want instructions? If they press "Y" the program gives a lengthy explanation of the program. The instructions include a sample problem.

If "N" is pressed the program immediately moves to the problem selection menu. The students select the number of problems that they wish to complete. They can choose any amount from 1-999. If they pick an unsually high number the program will ask "Do you really want to do 999 problems?"

The problems are randomly presented in vertical format. The denominators may or may not be the same. The numbers may or may not be mixed. There are three options for the student to choose from to begin solving the problem.

1) Change to the least common denominator.
2) Add
3) Reduce

Select (S to Stop) ___

When number one is pressed, the student has two attempts to find the least common denominator. After the second incorrect answer the program will offer the following help:

Choose one of the following methods of finding the least common denominator.

1) Common multiples
2) Prime factors
3) Both

The common multiples approach will list the multiples of each denominator up to the product of the denominators. The LCD will be in the white boxes.

The prime factors approach will list the prime factors of both denominators. The common factors will be in the white boxes.

If the student selects "Both" the two above methods will be given.

When the least common denominator is found, the student must multiply the denominators by the number that equals the LCD. The LCD is now displayed in the middle of the screen to the right.

If the student makes two computational errors, the program will give the strategy for solving by multiplying. The student must add the fractions then reduce the answer to lowest terms.

At the end of each set of problems the student receives a total error analysis which tells how many procedural, computational and LCD errors were made. The student can press "S" to stop at the beginning or end of a problem.

TEACHER OPTIONS

The program has an extensive Data Management System that allows the teacher to keep a record of classes, students, class and student profiles, grade plot and rank of student. These options are accessed via three DMS menus: Main Menu, Class Menu and Ranking Menu.

See page 7 of the Data Management System manual for the initial password to get into the system.

There are no options for setting the difficulty level in the fraction series.

SUGGESTIONS

1. Review the instructions with the students and explain the procedure. Program commands are always visible on screen.
2. Give the students instructions as to which strategy they should select when getting assistance in finding the least common denominator.
3. D.T.A. Applications:
   Guided Practice
   Independent Practice
   Vocabulary: numerator
   denominator
   least common denominator
   multiple
   prime factors
   error
   procedure
   computation

Company: MICROCOMPUTER
WORKSHOPS
Title: ADDITION WITH
CARRY
Activity:Addition

SOFTWARE SUMMARY

OBJECTIVES:

MFMT: 2.1.1 ADD WHOLE NUMBERS

SKILLS:

A1	RECALL ADDITION NUMBER FACTS
A4	ADD THREE 1 DIGIT NUMBERS
A6	ADD TWO NUMBERS WITH UP TO 2 DIGITS EACH, REGROUPING ONES TO TENS
A7	ADD TWO NUMBERS WITH UP TO 3 OR 4 DIGITS EACH, REGROUPING ONES TO TENS
A8	ADD TWO NUMBERS WITH UP TO 3 DIGITS EACH, REGROUPING TENS TO HUNDREDS
A9	ADD TWO NUMBERS WITH UP TO 3 DIGITS EACH, 1 OR 2 REGROUPINGS
A10	ADD TWO NUMBERS WITH UP TO 4 DIGITS EACH, 1 TO 3 REGROUPINGS
A11	ADD THREE NUMBERS WITH UP TO 2 DIGITS EACH, REGROUPING
A12	ADD THREE NUMBERS WITH UP TO 3 OR 4 DIGITS EACH, REGROUPING

ACTIVITY SUMMARY

Addition With Carry, is a program that randomly generates addition problems based on the students' or teachers' selection. This random generation prohibits the option of selecting only addition problems that do not require regrouping. This means that the problems may or may not have regrouping.

To begin Addition With Carry, press number 1 at the initial screen. The students are asked to type their first name and press return. They are then asked if they want instructions. If "Y" is pressed, the program explains the prodcedure for entering in digits.

If "N" is pressed they are moved to the selection menu. At this point the students choose the type of problems they are to work with.

1. The number of problems to do (1-9)
2. The number of rows in each problem (2-9)
3. The number of columns in each problem (1-9)

All problems are presented in vertical format. Each problem needs to be completed by entering the digits from right to left. Just as one would do using paper and pencil. A student can quit at anytime by presing the "*" key.

For example:
To work on basic facts, the student would select 2 rows with 1 column. If the answer is two digits they must enter the answer from right to left. Thus, the sum of 5 + 5 would be entered by pressing 0 then pressing 1.

For a correct response the program has several positive comments using the students name.

Ex. That's correct, NAME
    You made 0 errors on that problem.
    A great job! or A perfect try! or You're terrific!

For an incorrect response the program responds with:

EX. Sorry NAME,
    8 is incorrect. Try again

The student is given two chances to enter the correct answer. If a second incorrect answer is entered the program's response is:

Ex. The correct answer is XX
    When you understand your error, type in the correct answer.

If it takes the student several attempts to enter in the correct answer the program will respond in the following way:

Ex. That is correct NAME
    You made 3 errors on that problem.
    I'm rooting for you. or Keep trying. or You just need some practice.

During the solution of a problem the Return key does not have to be pressed to enter each number. The carry digit must be entered even if it is zero.

At the end of each set of problems the student receives a total error analysis which tells how many errors were made in adding, carying, and the number of problems completed without any errors. The student can press "P" to do more problems or "E" to exit the program.

TEACHER OPTIONS

The program has an extensive Data Management System that allows the teacher to keep a record of classes, students, class and student profiles, grade plot and rank of student. These options are accessed via three DMS menus: Main Menu, Class Menu and Ranking Menu.

See page 7 of the Data Management System manual for the initial password to get into the system.

At the DMS's main menu the teacher has the option of setting the difficulty level of the problems. This can only be performed per class. If a teacher wants to select the difficulty level per student, this option must be changed each time. The difficulty levels that are available for teachers are no different than what the student selects at the beginning of the program.

SUGGESTIONS

1. Teachers should have their students enter in the type of problems that they are to work on.
2. Activity instructions should be carefully read the first time the students work on this program.
3. The MFMT problems do not go beyond three rows and four columns.
4. Check the upper right hand corner of screen to see the problem number.
5. D.T.A. Applications:
    Independent Practice
    Vocabulary: Rows
    Columns
    cursor
    digit
    sum
    carry
    correct
    answer
    errors

Company: MICROCOMPUTER
WORKSHOPS
Title: DIVIDE DECIMALS
Activity: DIVIDE DECIMALS

SOFTWARE SUMMARY

OBJECTIVES:

MFMT: 2.1.11 DIVIDE DECIMALS

SKILLS: THIS PROGRAM DOES NOT MATCH ANY OF THE IDENTIFIED OBJECTIVES IN THE E.C.I. FOR E.S.E. MATERIALS.

ACTIVITY SUMMARY

DIVIDE DECIMALS, is a program that assists students in learning how to divide two decimal numbers of varying sizes. All problems have at least 3 digit dividends and the students can choose 1-2 or 3 digits for the divisor. Problems are randomly generated and never have remainders. All divisors are decimal numbers.

* The MFMT only contains whole number divisors with dividends of two to four digits and having one or two decimal places.*

All problems are presented using the division box format. The decimal point in the divisor is highlighted by an arrow. The student is instructed to use the "J" or "K" key to move the decimal point to make it a whole number. When completed they press "C" to "check" the answer. Next, an arrow appears beneath the decimal point in the dividend. The students are instructed to move the decimal point the same amount of spaces as the divisor. The program automatically moves the decimal up to the quotient position.

Each problem should be completed in the same manner as one would do using paper and pencil. During the multiplication step, the program will set up a problem vertically. Students are required enter the carry even if it is zero. During the subtraction step, the program does not go through the "borrowing process" as it does with the SUBTRACTION program. A student can quit at anytime by presing the "*" key.

To begin DIVIDING DECIMALS, the students are asked to type their first name and press return. Next, they are asked if they want instructions. If "Y" is pressed, the program offers a quick explanation of the prodcedure for entering in digits and working the problem.

If "N" is pressed they skip the directions and are moved to the selection menu. At this point the students choose the type of problems they are to work with.

Ex. You may try up to 9 problems. How many would you like? (1-9)

How many digits would you like in the divisor? (1-2-3)

For a correct response the program has several positive comments using the students name.

Ex. That's correct, NAME
You made 0 errors on that problem.
I see you did your homework! or The math department is proud of you!

For an incorrect response the program responds with:

EX. Sorry NAME,
8 is incorrect. Try again

The student is given two chances to enter the correct answer for each step in the process. If a second incorrect answer is entered the program's response is:

Ex. The correct answer is XX
When you understand your error, type in the correct answer.

If it takes the student several attempts to enter in the correct answer the program will respond in the following way:

Ex. That is correct NAME
You made XX errors on that problem.
Keep trying you'll get it! or Practice makes perfect!

The problem number is displayed in the top right hand corner of the screen at all times.

At the end of each set of problems the student receives a total error analysis which tells how many errors were made in dividing, multiplying, subtracting, carrying, bringing down and the number of problems completed without any errors. The student can press Return to do more problems or "*" to exit the program.

TEACHER OPTIONS

The program has an extensive Data Management System that allows the teacher to keep a record of classes, students, class and student profiles, grade plot and rank of student. These options are accessed via three DMS menus: Main Menu, Class Menu and Ranking Menu.

See page 7 of the Data Management System manual for the initial password to get into the system.

At the DMS's main menu the teacher has the option of setting the difficulty level of the problems. This can only be performed per class. If a teacher wants to select the difficulty level per student, this option must be changed each time. The difficulty levels that are available for teachers are no different than what the student selects at the beginning of the program.

SUGGESTIONS

1. Teachers should have their students enter in the number of digits in the divisor instead of using the DMS each time.
2. Review the instructions with the students and explain the procedure. Program commands are always visible on screen.
3. D.T.A. Applications:
   - Guided Practice
   - Independent Practice
   - Vocabulary: divisor
     - cursor
     - correct
     - answer
     - error
     - digit
     - integer
     - quotient
     - remainder

Company: MICROCOMPUTER WORKSHOPS
Title: LONG DIVISION
Activity: LONG DIVISION

SOFTWARE SUMMARY

OBJECTIVES:

MFMT: 2.1.4 DIVIDE WHOLE NUMBERS

SKILLS: D4 1-DIGIT DIVISOR INTO 3-DIGIT DIVIDEND
ALL SIGHT DIVISION, NO REMAINDERS
D6 1-DIGIT DIVISOR INTO 4-DIGIT DIVIDEND
ALL SIGHT DIVISION, NO REMAINDERS
D8 2-DIGIT DIVISOR INTO 3-DIGIT DIVIDEND,
NO REMAINDERS

ACTIVITY SUMMARY

LONG DIVISION, is a program that assists students in learning how to divide two numbers of varying sizes. All problems have at least 3 digit dividends and the students can choose 1-2 or 3 digits for the divisor. Problems are randomly generated and never have remainders.

All problems are presented using the division box format. Each problem should be completed in the same manner as one would do using paper and pencil. During the multiplication step, the student must do all computaions mentally or use scrap paper, it does require that the carry number be entered even if it is zero. During the subtraction step, the program does not go through the "borrowing process" as it does with the SUBTRACTION program. A student can quit at anytime by presing the "*" key.

To begin DIVISION, the students are asked to type their first name and press return. Next, they are asked if they want instructions. If "Y" is pressed, the program offers a quick explanation of the prodcedure for entering in digits and working the problem.

If "N" is pressed they skip the directions and are moved to the selection menu. At this point the students choose the type of problems they are to work with.

Ex. You may try up to 9 problems. How many would you like? (1-9)
How many digits would you like in the divisor? (1-2-3)

Each problem needs to be completed by first entering the digits beginning from the left to right finding the first number the divisor can go into. Then multiply the divisor by the number of times it can go into the dividend and subtract that number from the dividend. Continue this process until the last number of the quotient is derived.

For a correct response the program has several positive comments using the students name.

Ex. That's correct, NAME
You made 0 errors on that problem.
I see you did your homework! or The math department is proud of you!

For an incorrect response the program responds with:

EX. Sorry NAME,
8 is incorrect. Try again

The student is given two chances to enter the correct answer for each step in the process. If a second incorrect answer is entered the program's response is:

Ex. The correct answer is XX
When you understand your error, type in the correct answer.

If it takes the student several attempts to enter in the correct answer the program will respond in the following way:

Ex. That is correct NAME
You made XX errors on that problem.
Keep trying you'll get it! or Practice makes perfect!

The problem number is displayed in the top right hand corner of the screen at all times. During the solution of a problem the Return key does not have to be pressed to enter each number. The cursor enters the position of the next keyboard entry.

At the end of each set of problems the student receives a total error analysis which tells how many errors were made in dividing, multiplying, subtracting, carrying, and the number of problems completed without any errors. The student can press "P" to do more problems or "E" to exit the program.

TEACHER OPTIONS

The program has an extensive Data Management System that allows the teacher to keep a record of classes, students, class and student profiles, grade plot and rank of student. These options are accessed via three DMS menus: Main Menu, Class Menu and Ranking Menu.

See page 7 of the Data Management System manual for the initial password to get into the system.

At the DMS's main menu the teacher has the option of setting the difficulty level of the problems. This can only be performed per class.

If a teacher wants to select the difficulty level per student, this option must be changed each time. The difficulty levels that are available for teachers are no different than what the student selects at the beginning of the program.

SUGGESTIONS

1. Teachers should have their students enter in the number of digits in the divisor instead of using the DMS each time.
2. Review the instructions with the students and explain the procedure. Program commands are always visible on screen.
3. The MFMT problems do not go beyond a two digit divisor into a 3 or 4 digit dividend with no remainders.
4. D.T.A. Applications:
    - Guided Practice
    - Independent Practice
    - Vocabulary: divisor
      cursor
      correct
      answer
      error

Company: MICROCOMPUTER WORKSHOPS
Title: MULTIPLYING DECIMALS
Activity: MULTIPLYING DECIMALS

SOFTWARE SUMMARY

OBJECTIVES:

MFMT: 2.1.10 MULTIPLY DECIMALS

SKILLS:
- MD1 IDENTIFY THE NUMBER OF DECIMAL PLACES IN THE PRODUCT
- MD2 PLACE THE DECIMAL POINT IN THE PRODUCT CORRECTLY WITH UP TO TWO DECIMAL PLACES
- MD3 PLACE THE DECIMAL POINT IN THE PRODUCT CORRECTLY WITH UP TO THREE OR FOUR DECIMAL PLACES
- MD4 MULTIPLY A 3-DIGIT NUMBER BY A 2-DIGIT NUMBER WITH UP TO 2 DECIMAL PLACES IN EACH NUMBER

ACTIVITY SUMMARY

MULTIPLYING DECIMALS, is a program that assists students in learning how to multiply numbers of varying sizes. All problems have at least 3 digit top numbers and the student can choose 1-2 or 3 digits for the bottom number. Problems are randomly generated and almost always require regrouping.

All problems are presented in vertical format. Each problem needs to be completed by entering the digits from right to left. Just as one would do using paper and pencil. A student can quit at anytime by pressing the "Q" key.

To begin MULTIPLYING DECIMALS, press number 1 at the initial screen. The students are asked to type their first name and press Return. They are then given a choice to type #1, for instructions or #2 for problems and #3 to exit the program.

If #1 is pressed, the program gives a lengthy explanation of the prodcedure for performing the multiplication and placing the decimal point. If #2 is pressed they are moved to the selection menu. At this point the students choose the type of problems they are to work with.

Ex. Multiply by how many digits? (1-3)
Fill in zeros during addition? (Y-N)

A student can quit at anytime by pressing the "*" key.

For a correct response the program has several positive comments using the students name.

Ex. That's correct, NAME
You made 0 errors on that problem.
A great job! or A perfect try! or You're terrific!

For an incorrect response the program responds with:

EX. Sorry NAME,
8 is incorrect. Try again

The student is given two chances to enter the correct answer. If a second incorrect answer is entered the program's response is:

Ex. The correct answer is XX
When you understand your error, type in the correct answer.

When the student enters the correct answer the program asks for the decimal to be placed. The decimal point is shown with an arrow in the sum position to the right of the last digit.

Ex. Move the decimal point with the "J" and "K" keys. Press "C" to check placement.

The student has two attempts to place the decimal point correctly. After the second incorrect placement they are given detailed written instructions on how to perform this task. When they have completed this they press "C" to check their answer.

At the end of each set of problems the student receives a total error analysis which tells how many errors were made in multiplying, adding, carrying, placing the decimal point and the total number errors. The student can press Return to continue.

TEACHER OPTIONS

The program has an extensive Data Management System that allows the teacher to keep a record of classes, students, class and student profiles, grade plot and rank of student. These options are accessed via three DMS menus: Main Menu, Class Menu and Ranking Menu.

See page 7 of the Data Management System manual for the initial password to get into the management system.

At the DMS's main menu the teacher has the option of setting the difficulty level of the problems. This can only be performed per class. If a teacher wants to select the difficulty level per student, this option must be changed each time. The difficulty levels that are available for teachers are no different than what the student selects at the beginning of the program.

SUGGESTIONS

1. Teachers may want to pre-select the problems that they wish their class to practice.
2. Activity instructions are lengthy and should be skipped. The teacher should carefully go through the procedure with the students the first few times they use the program.
3. The MFMT problems do not go beyond two digit multipliers and factors with two decimal places.
4. Check the upper right hand corner of screen to see the problem number.
5. D.T.A. Applications:
   Independent Practice
   Vocabulary: line-up
   completed
   decimal(point)
   error
   carry
   digits

SOFTWARE SUMMARY

Company: MICROCOMPUTER
WORKSHOPS
Title: ADDING DECIMALS
Activity: DECIMAL
ADDITIONS

OBJECTIVES:

MFMT: 2.1.8 Add Decimals

SKILLS: OD1 WRITE NUMBERS IN A COLUMN ACCORDING TO THE DECIMAL PLACE
AD2 ADD UP TO THREE NUMBERS WITH ONE DECIMAL PLACE WITH REGROUPING
AD4 ADD TWO NUMBERS WITH TWO DECIMAL PLACES WITH REGROUPING

ACTIVITY SUMMARY

ADDING DECIMALS, is a program that randomly generates addition problems based on the students' or teachers' selection. Most problems require regrouping.

To begin ADDING DECIMALS, press number 1 at the initial screen. The students are asked to type their first name and press Return. They are then given a choice to type #1, for instructions or #2 for problems and #3 to exit the program. If #1 is pressed, the program gives a lengthy explanation of the prodcedure for lining up the numbers by the decimal points and entering in digits.

If #2 is pressed they are moved to the selection menu. At this point the students choose the type of problems they are to work with.

EX. How many digits in each number? (2-5)
How many numbers per problem? (2-5)
How many problems would you like? (1-9)

All problems are presented in horizontal format. The student uses the I, J, K, and M keys to move the numbers around. I = up, J = left, K = right, M = down. The C key is used to "check" the decimal line up. Students must press this key each time they have completed lining up a number with the given decimal point shown with an arrow, in the sum position. A student can quit at anytime by pressing the "*" key.

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These screen commands are visible at all times. The students are continually prompted as to which keys to use. During the solution of a problem the C key must be pressed each time a number is lined up and the Return key must be pressed to go on to the next number. If the carry number is zero the student can enter zero or press the Space Bar.

For a correct response the program has several positive comments using the students name.

Ex. That's correct, NAME
You made 0 errors on that problem.
A great job! or A perfect try! or You're terrific!

For an incorrect response the program responds with:

EX. Sorry NAME,
8 is incorrect. Try again

The student is given two chances to enter the correct answer.
If a second incorrect answer is entered the program's response is:

Ex. The correct answer is XX
When you understand your error, type in the correct answer.

If it takes the student several attempts to enter in the correct answer the program will respond in the following way:

Ex. That is correct NAME
You made 3 errors on that problem.
I'm rooting for you. or Keep trying. or You just need some practice.

At the end of each set of problems the student receives a total error analysis which tells how many errors were made in line-up, adding, carrying, and the total number errors. The student can press Return to continue.

TEACHER OPTIONS

The program has an extensive Data Management System that allows the teacher to keep a record of classes, students, class and student profiles, grade plot and rank of student. These options are accessed via three DMS menus: Main Menu, Class Menu and Ranking Menu.

See page 7 of the Data Management System manual for the initial password to get into the management system.

At the DMS's main menu the teacher has the option of setting the difficulty level of the problems. This can only be performed per class. If a teacher wants to select the difficulty level per student, this option must be changed each time. The difficulty levels that are available for teachers are no different than what the student selects at the beginning of the program.

SOFTWARE SUMMARY

Company: MICROCOMPUTER WORKSHOPS
Title: 1-2-3-DIGIT MULTIPLICATION
Activity: MULTIPLICATION

OBJECTIVES:

MFMT: 2.1.3 MULTIPLY WHOLE NUMBERS

SKILLS:
- M5 MULTIPLY 1-DIGIT BOTTOM NUMBER TIMES UP TO UP TO 3 OR 4-DIGIT TOP NUMBER, REGROUPING
- M6 MULTIPLY 2-DIGIT BOTTOM NUMBER TIMES 2-DIGIT TOP NUMBER, REGROUPING
- M7 MULTIPLY 2-DIGIT BOTTOM NUMBER TIMES UP TO 4-DIGIT TOP NUMBER, REGROUPING

ACTIVITY SUMMARY

MULTIPLICATION, is a program that assists students in learning how to multiply numbers of varying sizes. All problems have at least 3 digit top numbers and the students can choose 1-2 or 3 digits for the bottom number. Problems are randomly generated and almost always require regrouping.

All problems are presented in vertical format. Each problem needs to be completed by entering the digits from right to left. Just as one would do using paper and pencil. A student can quit at anytime by presing the "Q" key.

To begin **MULTIPLICATION**, the students are asked to type their first name and press return. Next they are asked if they want instructions. If "Y" is pressed, the program offers a quick explanation of the prodcedure for entering in digits and working the problem.

If "N" is pressed they skip the directions and are moved to the selection menu. At this point the students choose the type of problems they are to practice.

Ex. You may try up to 9 problems. How many would you like? (1-9)
How many digits would you like in the multiplier? (1-2-3)

Each problem needs to be completed by entering the digits from right to left. Just as one would do using paper and pencil.

For a correct response the program has several positive comments using the students name.

Ex. That's correct, NAME
You made 0 errors on that problem.
I see you did your homework! or The math department is proud of you!

For an incorrect response the program responds with:

Ex. Sorry NAME,
8 is incorrect. Try again

The student is given two chances to enter the correct answer for each step in the process. If a second incorrect answer is entered the program's response is:

Ex. The correct answer is XX
When you understand your error, type in the correct answer.

If it takes the student several attempts to enter in the correct answer the program will respond in the following way:

Ex. That is correct NAME
You made XX errors on that problem.
I'm rooting for you. or Keep trying. or You just need some practice.

The problem number is displayed in the top right hand corner of the screen at all times. During the solution of a problem the Return key does not have to be pressed to enter each number. The cursor enters the position of the next keyboard entry.

At the end of each set of problems the student receives a total error analysis which tells how many errors were made in multiplying, adding, carrying, and the number of problems completed without any errors. The student can press "P" to do more problems or "E" to exit the program.

TEACHER OPTIONS

The program has an extensive Data Management System that allows the teacher to keep a record of classes, students, class and student profiles, grade plot and rank of student. These options are accessed via three DMS menus: Main Menu, Class Menu and Ranking Menu.

See page 7 of the Data Management System manual for the initial password to get into the system.

At the DMS's main menu the teacher has the option of setting the difficulty level of the problems. This can only be performed per class. If a teacher wants to select the difficulty level per student, this option must be changed each time. The difficulty levels that are available for teachers are no different than what the student selects at the beginning of the program.

SUGGESTIONS

1. Teachers should have their students enter in the number of digits in the multiplier.
2. Review the instructions with the students and explain the procedure. Program commands are always visible on screen.
3. The MFMT problems do not go beyond two digit bottom number with up to 4-digit top number with regrouping.
4. D.T.A. Applications:
   Guided Practice
   Independent Practice
   Vocabulary: multiplier
   cursor
   correct
   answer
   error

Company: MICROCOMPUTER
WORKSHOPS
Title: SUBTRACTING
DECIMALS
Activity: DECIMAL
SUBTRACTION

SOFTWARE SUMMARY

OBJECTIVES:

MFMT: 2.1.9 SUBTRACT DECIMALS

SKILLS:
- SD1 SUBTRACT TWO NUMBERS WITH ONE DECIMAL PLACE WITHOUT REGROUPING
- SD2 SUBTRACT TWO NUMBERS WITH ONE DECIMAL PLACE WITH REGROUPING
- SD3 SUBTRACT TWO NUMBERS WITH TWO DECIMAL PLACES WITHOUT REGROUPING
- SD4 SUBTRACT TWO NUMBERS WITH TWO DECIMAL PLACES WITH REGROUPING

ACTIVITY SUMMARY

SUBTRACTING DECIMALS, is a program that randomly generates subtraction problems based on the students' or teachers' selection.

To begin SUBTRACTING DECIMALS, press number 1 at the initial screen. The students are asked to type their first name and press Return. They are then given a choice to type #1, for instructions or #2 for problems and #3 to exit the program. If #1 is pressed, the program gives a lengthy explanation of the prodcedure for lining up the numbers by the decimal points and performing the subtraction.

If #2 is pressed they are moved to the selection menu. At this point the students choose the type of problems they are to

EX. Do you want the problems to include borrowing? (Y or N)
How many digits in each number? (2-6)
How many problems would you like? (1-9)

All problems are presented in horizontal format. The student uses the I, J, K, and M keys to move the numbers around. I = up, J = left, K = right, M = down. The C key is used to "check" the decimal line up. Students must press this key each time they have completed lining up a number with the given decimal point shown with an arrow, in the sum position. A student can quit at anytime by pressing the "*" key.

Each problem needs to be completed by entering the digits from right to left. Just as one would do using paper and pencil. Borrow first if necessary.

To start the borrowing process the student should press "B". If the student does not borrow but just enters a number, the program will respond:
"You can not subtract without first borrowing. To borrow type B."

After "B" is typed the response is seen:
"Borrowing, Type the new value of the high lighted digit."

For a correct response the program has several positive comments using the students name.

```
Ex. That's correct, NAME
     You made 0 errors on that problem.
     A great job! or A perfect try! or You're terrific!
```

For an incorrect response the program responds with:

```
EX. Sorry NAME,
     8 is incorrect. Try again
```

The student is given two chances to enter the correct answer for each step in the process. If a second incorrect answer is entered the program's response is:

```
Ex. The correct answer is XX
     When you understand your error, type in the correct answer.
```

If it takes the student several attempts to enter in the correct answer the program will respond in the following way:

```
Ex. That is correct NAME
     You made XX errors on that problem.
     I'm rooting for you. or Keep trying. or You just need some practice.
```

At the end of each set of problems the student receives a total error analysis which tells how many errors were made in line-up, subtracting, borrowing, and the total number errors. The student can press Return to continue.

TEACHER OPTIONS

The program has an extensive Data Management System that allows the teacher to keep a record of classes, students, class and student profiles, grade plot and rank of student. These options are accessed via three DMS menus: Main Menu, Class Menu and Ranking Menu.

See page 7 of the Data Management System manual for the initial password to get into the management system.

At the DMS's main menu the teacher has the option of setting the difficulty level of the problems. This can only be performed per class. If a teacher wants to select the difficulty level per student, this option must be changed each time. The difficulty levels that are available for teachers are no different than what the student selects at the beginning of the program.

SUGGESTIONS

1. Teachers may want to pre-select the problems that they wish their class to practice.
2. Activity instructions are lengthy and should be skipped. The teacher should carefully go through the procedure with the students the first few times they use the program.
3. The MFMT problems do not go beyond subtracting two numbers with up to two decimal places with regrouping.
4. Check the upper right hand corner of screen to see the problem number.
5. D.T.A. Applications:
   Independent Practice
   Vocabulary: line-up
   completed
   decimal(point)
   error
   carry

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Company: MICROCOMPUTER WORKSHOPS
Title: SUBTRACTION
Activity: SUBTRACTION

SOFTWARE SUMMARY

OBJECTIVES:

MFMT: 2.1.2 SUBTRACT WHOLE NUMBERS

SKILLS:
S1 RECALL SUBTRACTION NUMBER FACTS
S2 SUBTRACT TWO NUMBERS WITH UP TO 2 DIGITS EACH,NO REGROUPING
S3 SUBTRACT TWO NUMBERS WITH UP TO 3 DIGITS EACH,NO REGROUPING
S4 SUBTRACT TWO NUMBERS WITH UP TO 2 DIGITS EACH,REGROUPING TENS TO ONES
S5 SUBTRACT TWO NUMBERS WITH UP TO 3 DIGITS EACH, REGROUPING TENS TO ONES
S6 SUBTRACT TWO NUMBERS WITH UP TO 3 DIGITS EACH,REGROUPING HUNDREDS TO TENS
S7 SUBTRACT TWO NUMBERS WITH UP TO 3 DIGITS EACH, REGROUPING TO TENS OR ONES
S8 SUBTRACT TWO NUMBERS WITH UP TO 3 DIGITS EACH, ONE OR TWO REGROUPINGS
S9 SUBTRACT TWO NUMBERS WITH UP TO 4 DIGITS EACH, ONE TO THREE REGROUPINGS
S10 SUBTRACT TWO NUMBERS WITH UP TO 5 DIGITS EACH, ONE TO FOUR REGROUPINGS

ACTIVITY SUMMARY

SUBTRACTION, is a program that assists students in learning how to subtract two numbers of varying sizes (with or without borrowing). Problems are randomly generated based on the student's selection.

All problems are presented in vertical format. Each problem needs to be completed by entering the digits from right to left. Just as one would do using paper and pencil. A student can quit at anytime by presing the "Q" key.

To begin **SUBTRACTION**, the students are asked to type their first name and press return. Next, they are asked if they want instructions. If "Y" is pressed, the program offers a lengthy discourse of the prodcedure for entering in digits and working the problem.

If "N" is pressed they skip the directions and are moved to the selection menu. At this point the students choose the type of problems they are to practice.

Ex. You may try up to 9 problems. How many would you like? (1-9)

They are then asked to type 1 or 2.

1. Problems with borrowing
2. Problems without borrowing

Each problem needs to be completed by entering the digits from right to left. Just as one would do using paper and pencil. Borrow first if necessary.

To start the borrowing process the student should press "B". If the student does not borrow but just enters a number, the program will respond:
"You can not subtract without first borrowing. To borrow type B."

After "B" is typed the response is seen:
"Borrowing, Type the new value of the high lighted digit."

For a correct response the program has several positive comments using the students name.

Ex. That's correct, NAME
    You made 0 errors on that problem.
    A great job! or A perfect try! or You're terrific!

For an incorrect response the program responds with:

EX. Sorry NAME,
    8 is incorrect. Try again

The student is given two chances to enter the correct answer for each step in the process. If a second incorrect answer is entered the program's response is:

Ex. The correct answer is XX
    When you understand your error, type in the correct answer.

If it takes the student several attempts to enter in the correct answer the program will respond in the following way:

Ex. That is correct NAME
    You made XX errors on that problem.
    I'm rooting for you. or Keep trying. or You just need some practice.

The problem number is displayed in the top right hand corner of the screen at all times. During the solution of a problem the Return key does not have to be pressed to enter each number. The cursor enters the position of the next keyboard entry.

At the end of each set of problems the student receives a total error analysis which tells how many errors were made in subtraction, borrowing, and the number of problems completed without any errors. The student can press "P" to do more problems or "E" to exit the program.

TEACHER OPTIONS

The program has an extensive Data Management System that allows the teacher to keep a record of classes, students, class and student profiles, grade plot and rank of student. These options are accessed via three DMS menus: Main Menu, Class Menu and Ranking Menu.

See page 7 of the Data Management System manual for the initial password to get into the system.

At the DMS's main menu the teacher has the option of setting the difficulty level of the problems. This can only be performed per class. If a teacher wants to select the difficulty level per student, this option must be changed each time. The difficulty levels that are available for teachers are no different than what the student selects at the beginning of the program.

SUGGESTIONS

1. Teachers should have their students enter in the type of problems that they are to practice.
2. Instructions are lengthy and wordy. Skip the instructions and explain the procedure to students directly. Program commands are always visible on screen.
3. The MFMT problems do not go beyond three digits with 1 or 2 regroupings.
4. Observe the students

4. D.T.A. Applications:
   Guided Practice
   Independent Practice
   Vocabulary: Borrowing
   high lighted
   value
   cursor
   space bar
   quit
   correct
   answer
   error

SOFTWARE SUMMARY

Company: MICROCOMPUTER WORKSHOPS
Title: SUBTRACT MIXED FRACTIONS
Activity: SUBTRACT MIXED FRACTIONS

OBJECTIVES:

MFMT: 2.1.6 Subtract Mixed Numbers

SKILLS: A1 FIND A COMMON DENOMINATOR OR LOWEST COMMON DENOMINATOR
S6 SUBTRACT MIXED NUMBERS WITH UNLIKE DENOMINATORS

ACTIVITY SUMMARY

SUBTRACTING MIXED FRACTIONS is designed to assist students in learning how to subtract fractions by providing them with comprehensive instruction and structure.

To begin SUBTRACTING MIXED FRACTIONS press number one at the main menu. The students are required to type their first name. They are next asked if they want instructions? If they press "Y" the program gives a lengthy explanation of the program. The instructions include a sample problem.

If "N" is pressed the program immediately moves to the problem selection menu. The students select the number of problems that they wish to complete. They can choose any amount from 1-999. If they pick an unsually high number the program will ask "Do you really want to do 999 problems?"

The problems are randomly presented in vertical format. The denominators may or may not be the same. The numbers are always mixed. There are four options for the student to choose from to begin solving the problem.

1) Change to the least common denominator.
2) Borrow from whole number part
3) Subtract
4) Reduce fractional part

Select (S to Stop) ____

When number one is pressed, the student has two attempts to find the least common denominator. After the second incorrect answer the program will offer the following help:

Choose one of the following methods of finding the least common denominator.

1) Common multiples
2) Prime factors
3) Both

The common multiples approach will list the multiples of each denominator up to the product of the denominators. The LCD will be in the white boxes.

The prime factors approach will list the prime factors of both denominators. The common factors will be in the white boxes.

If the student selects "Both" the two above methods will be given.

When the least common denominator is found, the student must multiply the denominators by the number that equals the LCD. The LCD is now displayed in the middle of the screen to the right.

If the student makes two computational errors, the program will give the strategy for solving by multiplying.

The student must then decide if they need to borrow from the whole number part. If it is necessary they should press number 2.
The screen commands will prompt them to enter in the new whole number amount then the new numerator amount. If they make two errors the program will help:

Ex. You just borrowed 1, which is equal to 24/24. This makes the fractional part of the fraction: 3/24 + 24/24 = 27/24

The fractions in the upper portion of the screen are written vertically.

```
Ex.    5
      ---
       4
```

The fractions in the lower portions of the screen, during the help phase are written horizontally:

Ex. 5/4

After changing to least common denominator and borrowing, the student is ready to subtract and reduce to lowest terms. The program will prompt the student in the same way as above through these two steps.

At the end of each set of problems the student receives a total error analysis which tells how many procedural, computational and LCD errors were made. The student can press "S" to stop at the beginning or end of a problem.

Company: Milliken
Title: MATH SEQUENCES
Activity: ADDITION

SOFTWARE SUMMARY

OBJECTIVES:

MFMT 2.1.1. Add Whole Numbers

SKILLS:

A1 Recall addition number facts
MILLIKEN PROBLEM LEVELS: ADDITION 1-8, 11-18

A2 Add two numbers with up to 2 digits each, no regrouping
MILLIKEN PROBLEM LEVELS: ADDITION 19-20, 23-25

A3 Add two numbers with up to 3 or 4 digits each, no regrouping
MILLIKEN PROBLEM LEVELS: ADDITION 41

A4 Add three 1-digit numbers
MILLIKEN PROBLEM LEVELS: ADDITION 9-10, 21-22, 35-36

A5 Add three numbers with up to 2 digits each, no regrouping
MILLIKEN PROBLEM LEVELS: NONE

A6 Add two numbers with up to 2 digits each, regrouping ones to tens
MILLIKEN PROBLEM LEVELS: ADDITION 26-34

A7 Add two numbers with up to 3 or 4 digits each, regrouping ones to tens
MILLIKEN PROBLEM LEVELS: ADDITION 42-45

A8 Add two numbers with up to 3 digits each, regrouping tens to hundreds
MILLIKEN PROBLEM LEVELS: ADDITION 46-47

A9 Add two numbers with up to 3 digits each, 1 or 2 regroupings
MILLIKEN PROBLEM LEVELS: ADDITION 48-50, 53-54

A10 Add two numbers with up to 4 digits each, 1 to 3 regroupings
MILLIKEN PROBLEM LEVELS: ADDITION 55-58

A11 Add three numbers with up to 2 digits each, regrouping
MILLIKEN PROBLEM LEVELS: ADDITION 37-40

A12 Add three numbers with up to 3 or 4 digits each, regrouping
MILLIKEN PROBLEM LEVELS: ADDITION 51-52, 59-60

* SEE ATTACHED PROBLEM LEVEL EXAMPLES FOR MORE INFORMATION.

ACTIVITY SUMMARY

This software provides "no frills" drill and practice on addition problems. It is divided into "problem levels", which range from basic addition facts to adding stacks of three 3 or 4-digit numbers requiring regrouping (carrying).

With a few exceptions (see attached Problem Level Examples), problems are in vertical computation format. A question mark appears where a digit is needed. The student responds by pressing the appropriate number key (no Return key is required). If the correct digit is entered, the question mark moves left to the next column. Thus, digits are entered in the correct right-to-left computational sequence.

On "problem levels" requiring regrouping (carrying), "Press Space Bar to regroup." is also displayed. Pressing the Space Bar in a column where carrying is not required produces no response from the computer. Pressing the Space Bar in a column where carrying is required moves the question mark to the top of the column, where the student enters the digit being carried from the previous column. Actually, this process is optional. If the student refrains from pressing the Space Bar and simply enters the correct digit at the bottom of the column, the response is considered correct.

If a problem is worked correctly, a reinforcement is presented, which is either animated or text, as selected at the start of the program. ANIMATED reinforcement consists of brief animations (a clown flipping, a train moving, a dragon breathing fire) with a single word ("WOW", "GREAT") displayed. TEXT reinforcement consists of messages--"Wow!", "Wow, Student!", "Super, Student!", etc.

If an incorrect digit is entered, the computer does not wait until a problem is completed to give corrective feedback. After the first wrong digit, this feedback generally consists of the message, "XX is wrong. Try again." The student then presses Return and reenters the digit.

The student is allowed one error per addition problem. If a second error (including carried digits) is made, the computer announces "XX is wrong." and supplies the correct answer digit by digit.

The session continues until at least a "minimum number of problems" is presented. This number is preset at 8, but can be reset to any number from 3 to 20. The computer also has a "mastery level" and a "failure level" which are preset at 80% and 50% (respectively) but can be reset by the teacher. As long as the student performs between the mastery level and the failure level, the computer continues to present problems at a given "problem level" indefinitely.

After the "minimum number of problems" has been presented, the "problem level" will automatically increase each time the student reaches the "mastery level" or decrease if the student reaches the "failure level". These changes are announced to the student: "Good news, Student. Your problem level went up to XX. Good Job!!"; "Bad news, Student. Your problem level went down to XX. Try a little harder." An excessive number of errors will cause the session to end with a message: "Bad news, Student. You have missed too many problems. See your teacher for help."

The computer maintains a constant display of student performance at the bottom of the screen. This includes: PL = XX ("problem level"), TC = XX (total correct), TP = XX (total problems), and AVG = XX% (percent accuracy). The total correct includes problems on which the student made only one error. These totals are reset to zero when the "problem level" changes.

TEACHER OPTIONS

1. Pressing Control-I at the initial title screen will get you into the management menu to change "minimum number of problems", "mastery level" and "failure level".

2. This software has an extensive management system which assigns "problem levels" and maintains records for up to 100 students divided into up to 5 classes.

3. A session can be ended at any time by pressing the Esc (escape) key. The computer then presents a summary of performance and returns to the initial title screen.

SUGGESTIONS

1. The animated reinforcement takes very little time away from instruction and we recommend it, unless the student finds it too childish. The text reinforcement addresses the student as "STUDENT" (unless the management system is used), which may not be very appealing.

NOTE: Contrary to the message on the opening screen, do NOT press Return after selecting A or T (Animated or Text) reinforcement.

2. Be sure the student can read the message "Press RETURN to go on.", and that he/she knows to watch for it. It appears after each problem and error message, and the computer simply waits for the Return key to be pressed. Failure to respond promptly will result in wasted instructional time. This may be particularly confusing after an error, when the computer displays two conflicing messages: "Try again." and "Press RETURN to go on." In these instances, the student must press Return and then try a new answer.

3. Encourage the student to press the Space Bar to regroup. This is not really required, but it may serve as a memory aid and establish the habit of writing the carried digit in paper and pencil computations. Also, it provides an additional error monitoring step.

4. Be sure that the student understands the right-to-left sequence of entering the digits. This may be confusing. For example, in the problems:
```
  8   and 8 + 2 = 10  the zero must be entered first.
+ 2
----
 10
```

5. D.T.A. Applications
   Warm-up
   Development (of computation skills if teacher is present to assist)
   Guided Practice
   Independent Practice
   Vocabulary: regroup

6. We suggest that you bypass the management system, and use the system in its "drill" mode. Do this in the following way: (1) Type "DRILL" when the program asks for the student's name, then select (2) "ANIMATED OR TEXT REINFORCEMENT" and (3) the "BEGINNING LEVEL".

Sequence ADDITION

Problem Level	Description	Problem Level Example
1	Sums to 6	1. 2 + 4 = X 2. 4 + 0 X 3. Review
4-5	Sums 7-10	4. 8 + 2 = X 5. 4 + 5 X
6-8	Sums 0-10	6. 3 + 5 = X 7. 3 + 6 X 8. Review
9-10	Sums to 10	9. 1 + 6 + 0 = X 10. 2 4 + 3 X
11-13	Sums 10-13	11. 6 + 7 = X 12. 8 + 4 X 13. Review
14-15	Sums 14-18	14. 8 + 6 = X 15. + [illegible] X
16-18	Sums 10-18	16. 9 + 6 = X 17. 7 + 8 X 18. Review
19-20	Sums 10-18 One addend = 10	19. 10 + 2 = X 20. 10 + 6 X

Problem Level	Description	Problem Level Example
21-22	Sums to 19 All addends < 10	21. 3 + 7 + 2 = 22. 8 2 + 5 X
23-24	Sums to 10-19 One addend 2 digits One addend 1 digit No regrouping	23. 13 + 6 = X 24. 12 + 6 X
25	Sums to 20-99 Two-digit addends No regrouping	25. 34 + 25 X
26	Sums 19-28 One addend 10-19 One addend 1 digit Regrouping	26. 17 + 8 X
27	Sums 20-98 One addend 2 digits One addend 1 digit Regrouping	27. 58 + 9 X
28	Sums 30-99 Both addends 2 digits Regrouping	28. 48 + 26 X
29-31	Sums 20-99 Both addends 2 digits Some regrouping	29-31. 37 + 29 X
32-34	Sums 20-99 One addend 2 digits One addend 1 or 2 digits Some regrouping	32-34. 47 + 9 X
35-36	Sums 10-27 All addends 1 digit Regrouping	35-36. 6 7 + 4 X

Sequence ADDITION

Problem Level	Description	Problem Level Example
37-38	Sums 40-99 All addends 2 digits Regrouping	**37-38.** 24 36 + 17 X
39-40	Sums 20-99 1 or 2 digit addends Regrouping	**39-40.** 24 36 + 5 X
41	Sums 200-999 2 & 3 digit addends No regrouping	**41.** 251 + 27 X
42-45	Sums to 999 2 & 3 digit addends Regroup ones to tens	**42-43.** 348 + 239 X **44-45.** 426 + 38 X
46-47	Sums to 999 2 & 3 digit addends Regrouping tens to hundreds	**46-47.** 471 + 283 X
48-50	Sums to 999 Three-digit addends Regrouping twice	**48-50.** 476 + 256 X
51-52	Sums to 999 Three-digit addends Regrouping twice	**51-52.** 348 257 + 163 X
53-54	Sums to 999 Three-digit addends Regrouping once or twice	**53-54.** 478 + 205 X
55-58	Sums to 9999 Four-digit addends Regrouping	**55-56.** 2768 + 3579 X **57-58.** 4195 + 2487 X
59-60	Sums to 9999 2, 3 & 4 digit addends Regrouping	**59-60.** 4765 216 + 39 X

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Company: Milliken
Title: MATH SEQUENCES
Activity: ADD FRACTIONS

SOFTWARE SUMMARY

OBJECTIVES:

MFMT 2.1.5. Add Mixed Numbers [and Simplify]

SKILLS:

A1 Find a common denominator or lowest common denominator
MILLIKEN PROBLEM LEVELS: FRACTIONS 17-20
A2 Rename fractions to a given denominator
MILLIKEN PROBLEM LEVELS: FRACTIONS 1-3
A3 Add fractions with like denominators
MILLIKEN PROBLEM LEVELS: FRACTIONS 14-16
A4 Add fractions with unlike denominators
MILLIKEN PROBLEM LEVELS: FRACTIONS 18, 21-22
A5 Add mixed numbers with like denominators
MILLIKEN PROBLEM LEVELS: FRACTIONS NONE
A6 Add mixed numbers with unlike denominators
MILLIKEN PROBLEM LEVELS: FRACTIONS 25

* SEE ATTACHED PROBLEM LEVEL EXAMPLES FOR MORE INFORMATION.

ACTIVITY SUMMARY

This software provides "no frills" drill and practice on fraction problems. It is divided into "problem levels", which range from basic fraction concepts to adding mixed numbers with unlike denominators.

Problems are in both vertical and horizontal computation format. A question mark appears where a digit is needed. The student responds by pressing the appropriate number key (no Return key is required). If the correct digit is entered, the question mark moves left to the next place where a digit is needed (denomiator postion, whole number..).

If a problem is worked correctly, a reinforcement is presented, which is either animated or text, as selected at the start of the program. ANIMATED reinforcement consists of brief animations (a wizard, a computer printing, a space ship) with a single word ("WOW", "TERIFFIC", "VERY GOOD") displayed. TEXT reinforcement consists of messages--"Wow!", "Wow, Student!", "Super, Student!", etc.

If an incorrect digit is entered, the computer does not wait until a problem is completed to give corrective feedback. After the first wrong digit, this feedback generally consists of the message, "XX is wrong. Try again." The student then presses Return and reenters the digit.

The student is allowed one error per problem. If a second error (including reducing) is made, the computer announces "XX is wrong." and supplies the correct answer digit by digit.

The session continues until at least a "minimum number of problems" is presented. This number is preset at 8, but can be reset to any number from 3 to 20. The computer also has a "mastery level" and a "failure level" which are preset at 80% and 50% (respectively) but can be reset by the teacher. As long as the student performs between the mastery level and the failure level, the computer continues to present problems at a given "problem level" indefinitely.

After the "minimum number of problems" has been presented, the "problem level" will automatically increase each time the student reaches the "mastery level" or decrease if the student reaches the "failure level". These changes are announced to the student: "Good news, Student. Your problem level went up to XX. Good job!!"; "Bad news, Student. Your problem level went down to XX. Try a little harder." An excessive number of errors will cause the session to end with a message: "Bad news, Student. You have missed too many problems. See your teacher for help."

The computer maintains a constant display of student performance at the bottom of the screen. This includes: PL = XX ("problem level"), TC = XX (total correct), TP = XX (total problems), and AVG = XX% (percent accuracy). The total correct includes problems on which the student made only one error. These totals are reset to zero when the "problem level" changes.

TEACHER OPTIONS

1. Pressing Control-I at the initial title screen will get you into the management menu to change "minimum number of problems", "mastery level" and "failure level".

2. This software has an extensive management system which assigns "problem levels" and maintains records for up to 100 students divided into up to 5 classes.

3. A session can be ended at any time by pressing the Esc (escape) key. The computer then presents a summary of performance and returns to the initial title screen.

SUGGESTIONS

1. The animated reinforcement takes very little time away from instruction and we recommend it, unless the student finds it too childish. The text reinforcement addresses the student as "STUDENT" (unless the management system is used), which may not be very appealing.

NOTE: Contrary to the message on the opening screen, do NOT press Return after selecting A or T (Animated or Text) reinforcement.

2. Be sure the student can read the message "Press RETURN to go on.", and that he/she knows to watch for it. It appears after each problem and error message, and the computer simply waits for the Return key to be pressed. Failure to respond promptly will result in wasted instructional time. This may be particularly confusing after an error, when the computer displays two conflicting messages: "Try again." and "Press RETURN to go on." In these instances, the student must press Return and then try a new answer.

3. Encourage the student to press the Space Bar to regroup. This is not really required, but it may serve as a memory aid and establish the habit of writing the carried digit in paper and pencil computations. Also, it provides an additional error monitoring step.

4. D.T.A. Applications
   Warm-up
   Development (of computation skills if teacher is present to assist)
   Guided Practice
   Independent Practice
   Vocabulary: reduce

5. We suggest that you bypass the management system, and use the system in its "drill" mode. Do this in the following way: (1) Type "DRILL" when the program asks for the student's name, then select (2) "ANIMATED OR TEXT REINFORCEMENT" and (3) the "BEGINNING LEVEL".

Sequence FRACTIONS

Problem Level	Description	Problem Level Example
1-3	Write equivalent fraction Common factors 2-50	1-2. $\frac{3}{4} = \frac{X}{20}$ 3. $\frac{X}{6} = \frac{8}{24}$
4-5	Order of fractions Numerators 1-9 Denominators 2-12	4. $\frac{1}{9} < \frac{5}{9}$ 5. $\frac{3}{7} > \frac{3}{9}$
6-7	Order of fractions Numerators 1-12 Denominators 1-12	6-7. $\frac{2}{7} < \frac{3}{5}$
8-9	Simplify fractions Common factors 2-24	8-9. $\frac{9}{12} = X$
10-11	Change fraction to mixed numeral Numerators 5-50 Denominators 2-9	10-11. $\frac{17}{2} = X$
12-13	Change mixed number to fraction Whole numbers 2-10 Fractional numbers 1-20	12-13. $2\frac{3}{5} = X$
14	Add like fractions Numerators 0-9 Denominators 2-24 Horizontal form	14. $\frac{7}{12} + \frac{4}{12} = X$
15	Subtract like fractions Numerators 0-9 Denominators 2-24 Horizontal form	15. $\frac{8}{9} - \frac{3}{9} = X$
16	Add or subtract like fractions Numerators 0-9 Denominators 2-24	16. $\begin{array}{r} \frac{7}{8} \\ -\frac{2}{8} \\ \hline X \end{array}$

Sequence FRACTIONS

Problem Level	Description	Problem Level Example
17	Write least common denominator Numerators 1-9 Denominators 2-20	17. $\frac{1}{3} + \frac{7}{12} = X$
18	Add unlike fractions Denominators are multiples Numerators 1-9 Denominators 2-20	18. $\begin{array}{r} \frac{3}{8} \\ +\frac{1}{4} \\ \hline X \end{array}$
19	Subtract unlike fractions Denominators are multiples Numerators 1-9 Denominators 2-20	19. $\begin{array}{r} \frac{7}{10} \\ -\frac{1}{5} \\ \hline X \end{array}$
20	Write least common denominator Numerators 1-9 Denominators 2-24	20. $\frac{1}{6} + \frac{1}{8} = X$
21-22	Add unlike fractions Numerators 1-12 Denominators 2-24	21-22. $\begin{array}{r} \frac{7}{9} \\ +\frac{1}{6} \\ \hline X \end{array}$
23-24	Subtract unlike fractions Numerators 1-12 Denominators 2-24	23-24. $\begin{array}{r} \frac{7}{9} \\ -\frac{1}{6} \\ \hline X \end{array}$
25	Add unlike mixed numbers Whole numbers 1-9 Numerators 1-12 Denominators 2-20	25. $\begin{array}{r} 3\frac{7}{8} \\ +5\frac{1}{6} \\ \hline X \end{array}$

Sequence FRACTIONS

Problem Level	Description	Problem Level Example
26	Subtract mixed numeral from whole number Whole numbers 1-9 Fractional numbers 2-24	26. $\begin{array}{r} 4 \\ -\,2\frac{2}{3} \\ \hline x \end{array}$
27	Subtract mixed numerals Fraction in minuend < fraction in subtrahend Whole numbers 1-9 Fractional numbers 1-24	27. $\begin{array}{r} 6\frac{5}{12} \\ -\,3\frac{7}{9} \\ \hline x \end{array}$
28	Multiply fraction by whole number Whole numbers 8-99 Numerators 1-9 Denominators 2-10	28. $\frac{3}{4} \times 20 = ?$
29	Multiply fractions Numerators 1-12 Denominators 2-24	29. $\frac{2}{3} \times \frac{5}{8} = ?$
30	Multiply mixed numeral by fraction Whole numbers 1-9 Fractional numbers 1-24	30. $2\frac{3}{4} \times \frac{7}{11} = ?$
31	Multiply mixed numerals Whole numbers 1-9 Fractional numbers 1-24	31. $1\frac{1}{2} \times 2\frac{2}{3} = ?$
32	Write reciprocals Fractional numbers 1-20	32. $\frac{8}{7} \times ? = 1$
33	Divide a whole number by a fraction Whole numbers 2-20 Fractional numbers 1-9	33. $20 \div \frac{2}{3} = x$
34	Divide fraction by a fraction Numerators 1-9 Denominators 2-24	34. $\frac{3}{4} \div \frac{5}{6} = x$
35	Divide mixed numerals Whole numbers 1-9 Fractional numbers 1-24	35. $1\frac{1}{6} \div 3\frac{2}{3} = x$
36	Change fraction to decimal Numerators 1-9 Denominators 2-12	36. Change $\frac{4}{5}$ to a decimal Type the letter of the correct answer

800

SOFTWARE SUMMARY

Company: Milliken
Title: Math Sequence
Activity: Decimal Sequence (ADDITION)

OBJECTIVE:

MFMT 2.1.8 Add Decimals

Skills:

AD 1 Add up to three numberes with one decimal place without regrouping.
MILLIKEN PROBLEM LEVELS: Decimal Sequence 12, 13, 17
AD 2 Add up to three numbers with one decimal place with regrouping.
MILLIKEN PROBLEM LEVEL: Decimal Sequence 14
AD 3 Add two numbers with two decimal places without regrouping.
MILLIKEN PROBLEM LEVEL: Decimal Sequence 15
AD 4 Add two numbers with two decimal places with regrouping.
MILLIKEN PROBLEM LEVEL: Decimal Sequence 16

* See attached problem level examples for more information.

ACTIVITY SUMMARY

This software program provides a "no frills" drill and practice on decimal addition problems. It is divided into "problem levels", which range from basic decimal addition facts to adding three numbers with three decimal places and regrouping.

To begin the program the student should type the word DRILL instead of his or her name. (This would be done only if the management system is not being used.) Next, the student must choose animation or text reinforcement by pressing the letter A or T. Finally the student must select a program level from the given range.

All problems are in vertical computation format. A question mark appears where a digit is needed. The student responds by pressing the appropriate number key (no Return key is required). If the correct digit is entered, the question mark moves left to the next column. Thus, digits are entered in the correct right-to-left computational sequence.

On "problem levels" requiring regrouping (carrying), "Press Space Bar to regroup" is displayed. Pressing the Space Bar moves the question mark to the top of the next column, where the student enters the carried number. Actually, this process is optional. If the student refrains from pressing the Space Bar and simply enters the correct digit at the bottom of the column, the response is considered correct.

If a problem is worked correctly, the student is reinforced with either animation or text. ANIMATED reinforcement consists of brief animations (a clown flipping, a train moving, a dragon breathing fire) with a single word ("WOW", "GREAT") displayed. TEXT reinforcement consists of messages--"Wow, Student!", "Super, Student!", etc.

If an incorrect digit is entered, the program gives immediate corrective feedback. This feedback generally consists of the message, "XX is wrong. Try again." The student then presses Return and reenters the digit.

The student is allowed one error per addition problem. If a second error (including carried digits) is made, the screen displays "XX is wrong," and supplies the correct answer digit by digit.

The program maintains a constant display of student performance at the bottom of the screen. This includes: PL = XX (problem level), TC = XX (total correct), TP = XX (total problems), and AVG = XX% (percent accuracy). The total correct includes problems on which the student made only one error. These totals are reset to zero when the "problem level" changes.

TEACHER OPTIONS

1. Pressing Control-I at the initial title screen will get you into the management menu to change "minimum number of problems", "mastery level", and "failure level".

2. This software has an extensive management system which assigns "problem levels" and maintains records for up to 100 students divided into up to 5 classes.

3. A session can be ended at any time by pressing the Esc (escape) key. The program then presents a summary of performance and returns to the initial title.

SUGGESTIONS

1. Be sure the student can read the messages "Press RETURN to go on" as well as "Press space bar to regroup" and that he/she knows to watch for them. The message "Press RETURN to go on" appears after each problem. After the first error the screen displays two messages: "Try again." and "Press RETURN to go on." In these instances, the student must press Return and then try a new answer.

2. Encourage the student to press the Space Bar to regroup. This is not really required, but it may serve as a memory aid and establish the habit of writing the carried digit in paper and pencil computations. Also, it provides an additional error monitoring step.

3. Be sure that the student understands the right-to-left sequence of entering the digits. This may be confusing. For example, in the problems: 1.7 and 1.7 + 2.0 the 7 must

$$\begin{array}{r} 1.7 \\ +\ 2.0 \\ \hline 3.7 \end{array}$$

be entered first.

4. D.T.A. Applications
   Warm-up
   Guided Practice
   Independent Practice

5. We suggest that you bypass the management system, and use the system in its "drill" mode. Do this in the following way: (1) Type "DRILL" when the program asks for the student's name, then (2) select "ANIMATED OR TEXT REINFORCEMENT" and (3) choose the appropriate beginning level.

NOTE: Contrary to the message on the opening screen, do NOT press Return after selection A or T (Animated or Text) reinforcement.

SOFTWARE SUMMARY

Company: Milliken
Title: Math Sequence
Activity: Decimal Sequence (DIVISION)

OBJECTIVE:

MFMT 2.1.11 DIVIDE DECIMALS

Skills:

DD 1 Place the decimal point in the quotient correctly when dividing by a whole number
MILLIKEN PROBLEM LEVEL: Decimal Sequence 50

* See attached problem level examples for more information.

ACTIVITY SUMMARY

This software program provides a "no frills" drill and practice on decimal division problems.

To begin the program the student should type the word DRILL instead of his or her name. (This would be done only if the management system is not being used.) Next, the student must choose animation or text reinforcement by pressing the letter A or T. Finally the student must select a program level from the given range.

The division problems use the numbers 2-9 as divisors and 10-99.999 as dividends. There are no remainders. All problems are in vertical computation format. A question mark appears where a digit or "the decimal point" is needed. The student responds by pressing the Space Bar when the question mark is over the appropriate number. (No Return key is required.) If the correct digit (or the decimal point when appropriate) is entered, the question mark moves to the next place that an answer is needed.

Students have the option of doing long or short division. "Press the Space Bar" is displayed during the computation process. If the student refrains from pressing the Space Bar and simply enters the correct digits, the response is considered correct.

If a problem is worked correctly, the student is reinforced with either animation or text. ANIMATED reinforcement consists of brief animations and single words (a scroll that says, "WELL DONE"; a ship with steam that says, "GREAT"; a dump truck dumping the word "WOW"). TEXT reinforcement consists of messages--"Wow!", "Wow, Student!", "Super, Student!", etc.

If an incorrect digit is entered, the program gives immediate corrective feedback. This feedback generally consists of the message, "XX is wrong. Try again." The student then presses Return and reenters the digit.

The student is allowed one error per division problem. If a second error (including carried digits) is made, the screen displays "XX is wrong," and supplies the correct answer digit by digit.

The program maintains a constant display of student performance at the bottom of the screen. This includes: PL = XX (problem level), TC = XX (total correct), TP = XX (total problems), and AVG = XX% (percent accuracy). The total correct includes problems on which the student made only one error. These totals are reset to zero when the "problem level" changes.

TEACHER OPTIONS

1. Pressing Control-I at the initial title screen will get you into the management menu to change "minimum number of problems", "masterylevel", and "failure level".

2. This software has an extensive management system which assigns "problem levels" and maintains records for up to 100 students divided into up to 5 classes.

3. A session can be ended at any time by pressing the Esc (escape) key. The computer then presents a summary of performance and returns to the initial title screen.

SUGGESTIONS

1. Be sure the student can read the message "Press RETURN to go on.", and that he/she knows to watch for it. The message appears after each problem and error message. After the first error the computer displays two conflicting messages: "Try again," and "Press RETURN to go on." In these instances, the student must press Return and then try a new answer.

2. Be sure that the student understands the right-to-left sequence of entering the digits. This may be confusing. For example, when dividing 2 into 11.56 the student should put the 5 above the 1 in the ones place, then the question mark will show where the 0 should be placed before the 1 from the 10.

3. D.T.A. Applications
   Warm-up
   Guided Practice
   Independent Practice

4. We suggest that you bypass the management system, and use the system in its "drill" mode. Do this in the following way: (1) Type "DRILL" when the program asks for the student's name, then (2) select "ANIMATED OR TEXT REINFORCEMENT" and (3) enter "50" as the beginning level.

SOFTWARE SUMMARY

Company: Milliken
Title: Math Sequence
Activity: Decimal Sequence
(MULTIPLICATION)

OBJECTIVE:

MFMT 2.1.10 MULTIPLY DECIMALS

Skills:

MD 1 Identify number of decimal places in the product.
MILLIKEN PROBLEM LEVELS: Decimal Sequence 31, 40
MD 2 Place decimal point correctly in the product with up to two decimal places.
MILLIKEN PROBLEM LEVELS: Decimal Sequence 41,42,43
MD 3 Place decimal point correctly in the product with three or four decimal places.
MILLIKEN PROBLEM LEVELS: Decimal Sequence 44,45

* See attached problem level examples for more information.

ACTIVITY SUMMARY

This software program provides a "no frills" drill and practice on decimal multiplication problems. It is divided into "problem levels", which range from basic decimal multiplication facts up to two decimal numbers with up to three decimal places with regrouping.

To begin the program the student should type the word DRILL instead of his or her name. (This would be done only if the management system is not being used.) Next, the student must choose animation or text reinforcement by pressing the letter A or T. Finally the student must select a program level from the given range.

All problems are in vertical computation format, with the exception of level 31. A question mark appears where a digit is needed. The student responds by pressing the appropriate number key (no Return key is required). If the correct digit is entered, the question mark moves left to the next column. Thus, digits are entered in the correct right-to-left computational sequence.

On "problem levels" requiring regrouping (carrying), "Press Space Bar to regroup" is displayed. Pressing the Space Bar in a column where regrouping is required moves the question mark to the top of the column, where the student enters the carried number. Actually, this process is optional. If the student refrains from pressing the Space Bar and simply enters the correct digit at the bottom of the column, the response is considered correct.

If a problem is worked correctly, the student is reinforced with either animation or text. ANIMATED reinforcement consists of brief animations and single words (a scroll that says, "WELL DONE"; a ship with steam that says, "GREAT"; a dump truck dumping the word "WOW"). TEXT reinforcement consists of messages--"Wow!", "Wow, Student!", "Super, Student!", etc.

If an incorrect digit is entered, the program gives immediate corrective feedback. This feedback generally consists of the message, "XX is wrong. Try again." The student then presses Return and reenters the digit.

The student is allowed one error per multiplication problem. If a second error (including carried digits) is made, the program displays "XX is wrong," and supplies the correct answer digit by digit.

The program maintains a constant display of student performance at the bottom of the screen. This includes: PL = XX ("problem level"), TC = XX (total correct), TP = XX (total problems), and AVG = XX% (percent accuracy). The total correct includes problems on which the student made only one error. These totals are reset to zero when the "problem level" changes.

TEACHER OPTIONS

1. Pressing Control-I at the initial title screen will get you into the management menu to change "minimum number of problems", "mastery level", and "failure level".
2. This software has an extensive management system which assigns "problem levels" and maintains records for up to 100 students divided into up to 5 classes.
3. A session can be ended at any time by pressing the Esc (escape) key. The program then presents a summary of performance and returns to the initial title screen.

SUGGESTIONS

1. Be sure the student can read the message "Press RETURN to go on.", and that he/she knows to watch for it. After the first error the and program displays two messages: "Try again," and "Press RETURN to go on." In these instances, the student must press Return and then try a new answer.
2. Encourage the student to press the Space Bar to regroup. This is not really required, but it may serve as a memory aid and establish the habit of writing the carried digit in paper and pencil computations. Also, it provides an additional error monitoring step.

3. Be sure that the student understands the right-to-left sequence of entering the digits. This may be confusing. For example, in the problems:
   .4 and .4 x .3 the 2 must be entered first.
   x.3
   ----

4. D.T.A. Applications
   Warm-up
   Guided Practice
   Independent Practice

5. We suggest that you bypass the management system, and use the system in its "drill" mode. Do this in the following way: (1) Type "DRILL" when the program asks for the student's name, then (2) select "ANIMATED OR TEXT REINFORCEMENT" and (3) choose the appropriate level.

* NOTE: Contrary to the message on the opening screen, do NOT press Return after selection A or T (Animated or Text) reinforcement.

SOFTWARE SUMMARY

SOFTWARE SUMMARY
Company: Milliken
Title: Math Sequence
Activity: Decimal Sequence
(SUBTRACTION)

OBJECTIVE:

MFMT 2.1.9 SUBTRACT DECIMALS

Skills:

SD 1 Sutract two numbers both with one decimal place without regrouping.
MILLIKEN PROBLEM LEVELS: Decimal Sequence 21

SD 2 Subtract two numbers both with one decimal place with regrouping.
MILLIKEN PROBLEM LEVELS: Decimal Sequence 22

SD 3 Subtract two numbers with two decimal places without regrouping.
MILLIKEN PROBLEM LEVELS: Decimal Sequence 23

SD 4 Subtract two numbers with up to two decimal places with regrouping.
MILLIKEN PROBLEM LEVELS: Decimal Sequence 24, 25, 26

* See attached problem level examples for more information.

ACTIVITY SUMMARY

This software program provides a "no frills" drill and practice on decimal subtraction problems. It is divided into "problem levels", which range from basic decimal subtraction facts to adding three numbers with three decimal places and regrouping.

To begin the program the student should type the word DRILL instead of his or her name. (This would be done only if the management system is not being used.) Next, the student must choose animation or text reinforcement by pressing the letter A or T. Finally the student must select a program level from the given range.

All problems are in vertical computation format. A question mark appears where a digit is needed. The student responds by pressing the appropriate number key (no Return key is required). If the correct digit is entered, the question mark moves left to the next column. Thus, digits are entered in the correct right-to-left computational sequence.

On "problem levels" requiring regrouping (carrying), "Press Space Bar to regroup" is displayed. Pressing the Space Bar moves the question mark to the top of the next column, where the student enters the carried number. Actually, this process is optional. If the student refrains from pressing the Space Bar and simply enters the correct digit at the bottom of the column, the response is considered correct.

If a problem is worked correctly, the student is reinforced with either animation or text. ANIMATED reinforcement consists of brief animations (a clown flipping, a train moving, a dragon breathing fire) with a single word ("WOW", "GREAT") displayed. TEXT reinforcement consists of messages--"Wow, Student!", "Super, Student!", etc.

If an incorrect digit is entered, the program gives immediate corrective feedback. This feedback generally consists of the message, "XX is wrong. Try again." The student then presses Return and reenters the digit.

The student is allowed one error per subtraction problem. If a second error (including carried digits) is made, the screen displays "XX is wrong," and supplies the correct answer digit by digit.

The program maintains a constant display of student performance at the bottom of the screen. This includes: PL = XX (problem level), TC = XX (total correct), TP = XX (total problems), and AVG = XX% (percent accuracy). The total correct includes problems on which the student made only one error. These totals are reset to zero when the "problem level" changes.

TEACHER OPTIONS

1. Pressing Control-I at the initial title screen will get you into the management menu to change "minimum number of problems", "mastery level", and "failure level".
2. This software has an extensive management system which assigns "problem levels" and maintains records for up to 100 students divided into as many as 5 classes.
3. A session can be ended at any time by pressing the Esc (escape) key. The program then presents a summary of performance and returns to the initial title screen.

SUGGESTIONS

1. Be sure the student can read the messages "Press RETURN to go on" as well as "Press space bar to regroup" and that he/she knows to watch for them. The message "Press RETURN to go on" appears after each problem. After the first error the screen displays two messages: "Try again." and "Press RETURN to go on." In these instances, the student must press Return and then try a new answer.

2. Encourage the student to press the Space Bar to regroup. This is not really required, but it may serve as a memory aid and establish the habit of writing the carried digit in paper and pencil computations. Also, it provides an additional error monitoring step. EX.

$$\begin{array}{r} 27 \\ -\ 7 \\ \hline 20 \end{array}$$

The zero must be entered first.

3. Be sure that the student understands the right-to-left sequence of entering the digits.

4. D.T.A. Applications
   Warm-up
   Guided Practice
   Independent Practice

5. We suggest that you bypass the management system, and use the system in its "drill" mode. Do this in the following way: (1) Type "DRILL" when the program asks for the student's name, then (2) select "ANIMATED OR TEXT REINFORCEMENT" and (3) choose the appropriate beginning level.

NOTE: Contrary to the message on the opening screen, do NOT press Return after selection A or T (Animated or Text) reinforcement.

Company: Milliken
Title: Math Sequence
Activity: Division

SOFTWARE SUMMARY

OBJECTIVES:

MFMT 2.1.4 Divide whole numbers

SKILLS:

D1 Recall division number facts
MILLIKEN PROBLEM LEVELS: DIVISION 2-3, 5-8, 17-18, 20 -23, 25-26, 28 -29, 31-32, 34-39

D2 1-digit divisor into 2-digit dividend, all sight division, no remainders
MILLIKEN PROBLEM LEVELS: DIVISION 42

D3 1-digit divisor into 2-digit dividend, remainders possible
MILLIKEN PROBLEM LEVELS: DIVISION ***40-41, 43-44

D4 1-digit divisor into 3-digit dividend, mostly sight division, no remainders
MILLIKEN PROBLEM LEVELS: DIVISION 45

D5 1-digit divisor into 3-digit dividend, remainders possible
MILLIKEN PROBLEM LEVELS: DIVISION 46-47

D6 1-digit divisor into 4-digit dividend, mostly sight division, no remainders
MILLIKEN PROBLEM LEVELS: DIVISION 48

D7 1-digit divisor into 4-digit dividend, remainders possible
MILLIKEN PROBLEM LEVELS: DIVISION 49-51

D8 2-digit divisor into 3-digit dividend, no remainders
MILLIKEN PROBLEM LEVELS: DIVISION 52

D9 2-digit divisor into 2-digit dividend, remainders possible
MILLIKEN PROBLEM LEVELS: DIVISION ***53

D10 2-digit divisor into 3-digit dividend, remainders possible
MILLIKEN PROBLEM LEVELS: DIVISION ***54, 56-60

D11 2-digit divisor into 4-digit dividend, remainders possible
MILLIKEN PROBLEM LEVELS: DIVISION ***55, 61

D12 2-digit divisor into 5-digit dividend, remainders possible
MILLIKEN PROBLEM LEVELS: DIVISION ***62-64

*** These levels extend beyond MFMT requirments by including problems involving remainders. However, they provide practice in the estimation step of the basic computation strategy.

* SEE ATTACHED PROBLEM LEVEL EXAMPLES FOR MORE INFORMATION.

ACTIVITY SUMMARY

This software provides "no frills" drill and practice on division problems. It is divided into "problem levels", which range from basic division facts to problems having a two digit divisor into a five digit dividend, with a remainder.

With a few exceptions (see attached Problem Level Examples), problems are in vertical computation format. A question mark appears where a digit is needed. The student responds by pressing the Space Bar when the question mark is over the appropriate number. The student then enters the appropriate number for an answer. (no Return key is required). If the correct digit is entered, the question mark moves to the next place that an answer is needed. If a remainder is necessary a question mark appears next to an "r".

Students have the option of doing long or short division. "Press Space Bar for short division." is displayed during the computation process. If the student refrains from pressing the Space Bar and simply enters the correct digits, the response is considered correct.

If a problem is worked correctly, a reinforcement is presented, which is either animated or text, as selected at the start of the program. ANIMATED reinforcement consists of brief animations (a clown flipping, a train moving, a dragon breathing fire) with a single word ("WOW", "GREAT") displayed. TEXT reinforcement consists of messages--"Wow!", "Wow, Student!", "Super, Student!", etc.

If an incorrect digit is entered, the computer does not wait until a problem is completed to give corrective feedback. After the first wrong digit, this feedback generally consists of the message, "XX is wrong. Try again." The student then presses Return and reenters the digit.

The student is allowed one error per division problem. If a second error is made, the computer announces "XX is wrong." and supplies the correct answer digit by digit.

The session continues until at least a "minimum number of problems" is presented. This number is preset at 8, but can be reset to any number from 3 to 20. The computer also has a "mastery level" and a "failure level" which are preset at 80% and 50% (respectively) but can be reset by the teacher. As long as the student performs between the mastery level and the failure level, the computer continues to present problems at a given "problem level" indefinitely.

After the "minimum number of problems" has been presented, the "problem level" will automatically increase each time the student reaches the "mastery level" or decrease if the student reaches the "failure level". These changes are announced to the student: "Good news, Student. Your problem level went up to XX. Good job!!": "Bad news, Student. Your problem level went down to XX. Try a little harder." An excessive number of errors will cause the session to end with a message: "Bad news, Student. You have missed too many problems. See your teacher for help."

The computer maintains a constant display of student performance at the bottom of the screen. This includes: PL = XX ("problem level"), TC = XX (total correct), TP = XX (total problems), and AVG = XX% (percent accuracy). The total correct includes problems on which the student made only one error. These totals are reset to zero when the "problem level" changes.

TEACHER OPTIONS

1. Pressing Control-I at the initial title screen will get you into the management menu to change "minimum number of problems". "mastery level" and "failure level".

2. This software has an extensive management system which assigns "problem levels" and maintains records for up to 100 students divided into up to 5 classes.

3. A session can be ended at any time by pressing the Esc (escape) key. The computer then presents a summary of performance and returns to the initial title screen.

SUGGESTIONS

1. The animated reinforcement takes very little time away from instruction and we recommend it. unless the student finds it too childish. The text reinforcement addresses the student as "STUDENT" (unless the management system is used). which may not be very appealing.

NOTE: Contrary to the message on the opening screen. do NOT press Return after selecting A or T (Animated or Text) reinforcement.

2. Be sure the student can read the message "Press RETURN to go on.". and that he/she knows to watch for it. It appears after each problem and error message, and the computer simply waits for the Return key to be pressed. Failure to respond promptly will result in wasted instructional time. This may be particularly confusing after an error. when the computer displays two conflicing messages: "Try again." and "Press RETURN to go on." In these instances. the student must press Return and then try a new answer.

3. Be sure that the student understands the right-to-left sequence of entering the digits.

4. D.T.A. Applications
   Warm-up
   Development (of computation skills if teacher is present to assist)
   Guided Practice
   Independent Practice
   Vocabulary:

5. We suggest that you bypass the management system. and use the system in its "drill" mode. Do this in the following way:
   (1) Type "DRILL" when the program asks for the student's name. then
   select (2) "ANIMATED OR TEXT REINFORCEMENT" and (3) the "BEGINNING LEVEL".

Sequence DIVISION

Problem Level	Description	Problem Level Example
28-29	Quotients 1-9 Divisor is 7 Dividends 7-63 (Multiples of 7)	28. $56 \div 7 = X$ 29. $\begin{array}{r}X\\7\overline{)28}\end{array}$
30	Missing factors 0-8 Multiplicand is 8 Products 0-72 (Multiples of 8)	30. $? \times 8 = 0$
31-32	Quotients 1-9 Divisor is 8 Dividends 8-72 (Multiples of 8)	31. $24 \div 8 = X$ 32. $\begin{array}{r}X\\8\overline{)72}\end{array}$
33	Missing factors 0-9 Multiplicand is 9 Products 0-81 (Multiples of 9)	33. $? \times 9 = 72$
34-35	Quotients 1-9 Divisor is 9 Dividends 9-81 (Multiples of 9)	34. $54 \div 9 = X$ 35. $\begin{array}{r}X\\9\overline{)45}\end{array}$
36-39	Quotients 1-9 Divisors 1-10 Dividends to 90 No remainders	36-37. $27 \div 3 = X$ 38-39. $\begin{array}{r}X\\8\overline{)56}\end{array}$
40	Quotients 1-9 Divisors 2-9 Dividends 10-19 Remainders possible	40. $\begin{array}{r}X\\2\overline{)17}\end{array}$
41	Quotients 1-9 Divisors 2-9 Dividends 10-89 Remainders possible	41. $\begin{array}{r}X\\8\overline{)70}\end{array}$

Problem Level	Description	Problem Level Example
42	Quotients 10-39 Divisors 2-9 Dividends 10-99 No remainders	42. $\begin{array}{r}XX\\3\overline{)6\text{[illegible]}}\end{array}$
43	Quotients 10-39 Divisors 2-9 Dividends 10-99 Remainders possible	43. $\begin{array}{r}XX\\3\overline{)97}\end{array}$
44	Quotients 1-39 Divisors 2-9 Dividends 1-99 Remainders possible	44. $\begin{array}{r}X\\7\overline{)23}\end{array}$
45	Quotients 100-499 Divisors 2-9 Dividends 100-999 No remainders	45. $\begin{array}{r}XXX\\2\overline{)484}\end{array}$
46	Quotients 10-99 Divisors 2-9 Dividends 100-999 Remainders possible	46. $\begin{array}{r}XX\\3\overline{)256}\end{array}$
47	Quotients 100-499 Divisors 2-9 Dividends 100-999 Remainders possible	47. $\begin{array}{r}XXX\\5\overline{)806}\end{array}$
48	Quotients 1000-4999 Divisors 2-9 Dividends 1000-9999 No remainders	48. $\begin{array}{r}XXXX\\3\overline{)9636}\end{array}$
49	Quotients 100-999 Divisors 2-9 Dividends 1000-9999 Remainders possible	49. $\begin{array}{r}XXX\\8\overline{)3468}\end{array}$

Sequence DIVISION

Problem Level	Description	Problem Level Example
1	Missing factors 0-9 Multiplicands 1-2 Products 0-20 (Multiples of 2)	**1.** ? × 2 = 10
2-3	Quotients 1-9 Divisor is 2 Dividends 0-18 (Multiples of 2)	**2.** 14 ÷ 2 = X **3.** $\overset{X}{2\overline{)\,8}}$
4	Missing Factors 0-9 Multiplicand is 5 Products 0-45 (Multiples of 5)	**4.** ? × 5 = 15
5-6	Quotients 1-9 Divisor is 5 Dividends 0-45 (Multiples of 5)	**5.** 35 ÷ 5 = X **6.** $\overset{X}{5\overline{)\,20}}$
7-8	Quotients 1-9 Divisors 2 or 5 Dividends 2-45 (Multiples of 2 or 5)	**7.** 20 ÷ 5 = X **8.** $\overset{X}{2\overline{)\,18}}$
	Missing factors 0-9 Multiplicand is 10 or 1 Products 0-9 & 0-90 (Multiples of 10)	**9.** ? × 10 = 80
-11	Missing quotients 1-9 Divisors 1 or 10 Dividends 1-9 & 10-90 (Multiples of 10)	**10.** 8 ÷ 1 = X **11.** $\overset{X}{10\overline{)\,70}}$
15	Quotients 1-9 Divisors 1, 2, 5, 10 Dividends 1-9, 2-18, 5-45, 10-90	**12-13.** 80 ÷ 10 = X **14-15.** $\overset{X}{5\overline{)\,35}}$
16	Missing factors 0-9 Multiplicand is 3 Products 0-27 (Multiples of 3)	**16.** ? × 3 = 27
17-18	Quotients 1-9 Divisor is 3 Dividends 3-27 (Multiples of 3)	**17.** 9 ÷ 3 = X **18.** $\overset{X}{3\overline{)\,18}}$
19	Missing factors 0-9 Multiplicand is 4 Products 0-36 (Multiples of 4)	**19.** ? × 4 = 32
20-21	Missing quotients 1-9 Divisor is 4 Dividends 4-36 (Multiples of 4)	**20.** 24 ÷ 4 = X **21.** $\overset{X}{4\overline{)\,16}}$
22-23	Quotients 1-9 Divisors 1-5 & 10 Dividends to 50	**22.** 16 ÷ 2 = X **23.** $\overset{X}{5\overline{)\,35}}$
24	Missing Factors 0-9 Multiplicand is 6 Products 0-54 (Multiples of 6)	**24.** ? × 6 = 24
25-26	Quotients 1-9 Divisor is 6 Dividends 6-54 (Multiples of 6)	**25.** 42 ÷ 6 = X **26.** $\overset{X}{6\overline{)\,48}}$
27	Missing factors 0-9 Multiplicand is 7 Products 0-63 (Multiples of 7)	**27.** ? × 7 = 42

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Sequence DIVISION

Problem Level	Description	Problem Level Example
	Quotients 1000-4999 Divisors 2-9 Dividends 1000-9999 Remainders possible	**50.** $\begin{array}{r}\text{XXXX}\\7\overline{)8234}\end{array}$
51	Quotients 100-4999 Divisors 2-9 Dividends 1000-9999 Remainders possible	**51.** $\begin{array}{r}\text{XXX}\\4\overline{)3189}\end{array}$
52	Quotients 10-99 Divisors 10, 20, 30, 40 Dividends 100-990 No remainders	**52.** $\begin{array}{r}\text{XX}\\30\overline{)690}\end{array}$
53	Quotients 1-9 Divisors 10-90 (Multiples of 10) Dividends 10-99 Remainders possible	**53.** $\begin{array}{r}\text{X}\\20\overline{)47}\end{array}$
54	Quotients 10-99 Divisors 10-90 (Multiples of 10) Dividends 100-999 Remainders possible	**54.** $\begin{array}{r}\text{XX}\\30\overline{)778}\end{array}$
55	Quotients 10-999 Divisors 10-90 (Multiples of 10) Dividends 1000-9999 Remainders possible	**55.** $\begin{array}{r}\text{XX}\\60\overline{)4873}\end{array}$

Problem Level	Description	Problem Level Example
56-57	Quotients 1-9 Divisors 10-99 Dividends 10-199 Remainders possible	**56-57.** $\begin{array}{r}\text{X}\\74\overline{)138}\end{array}$
58-59	Quotients 10-99 Divisors 10-99 Dividends 100-999 Remainders possible	**58-59.** $\begin{array}{r}\text{XX}\\38\overline{)734}\end{array}$
60	Quotients 1-99 Divisors 10-99 Dividends 100-999 Remainders possible	**60.** $\begin{array}{r}\text{X}\\39\overline{)247}\end{array}$
61	Quotients 10-99 Divisors 10-99 Dividends 1000-9899 Remainders	**61.** $\begin{array}{r}\text{XX}\\54\overline{)2468}\end{array}$
62-64	Quotients 100-999 Divisors 10-99 Dividends 1000-98,999 Remainders	**62-64.** $\begin{array}{r}\text{XXX}\\47\overline{)36782}\end{array}$

Company: Milliken
Title: Math Sequences
Activity: Multiplication

SOFTWARE SUMMARY

OBJECTIVES:

MFMT Objective 2.1.3 Multiply whole numbers

SKILLS:

M1 Recall multiplication number facts
MILLIKEN PROBLEM LEVELS: MULTIPLICATION 1-30

M2 Multiply 1-digit bottom number times 2-digit top number, no regrouping
MILLIKEN PROBLEM LEVELS: MULTIPLICATION 32

M3 Multiply 1-digit bottom number times up to 4-digit top number, no regrouping
MILLIKEN PROBLEM LEVELS: MULTIPLICATION 31, 36

M4 Multiply 1-digit bottom number times 2-digit top number, regrouping
MILLIKEN PROBLEM LEVELS: MULTIPLICATION 33-35

M5 Multiply 1-digit bottom number times up to 3 or 4-digit top number regrouping
MILLIKEN PROBLEM LEVELS: MULTIPLICATION 37-42

M6 Multiply 2-digit bottom number times 2-digit top number, regrouping
MILLIKEN PROBLEM LEVELS: MULTIPLICATION 43 -49

M7 Multiply 2-digit bottom number times up to 4-digit top number regrouping
MILLIKEN PROBLEM LEVELS: MULTIPLICATION 50-59

* SEE ATTACHED PROBLEM LEVEL EXAMPLES FOR MORE INFORMATION.

ACTIVITY SUMMARY

This software provides "no frills" drill and practice on multiplication problems. It is divided into "problem levels", which range from basic multiplication facts to multiplying two digit bottom numbers by up to four digit top numbers with regrouping required.

With a few exceptions (see attached Problem Level Examples), problems are in vertical computation format. A question mark appears where a digit is needed. The student responds by pressing the appropriate number key (no Return key is required). If the correct digit is entered, the question mark moves left to the next column. Thus, digits are entered in the correct right-to-left computational sequence.

On "problem levels" requiring regrouping (carrying), "Press Space Bar to regroup." is also displayed. Pressing the Space Bar in a column where carrying is not required produces no response from the computer.

Pressing the Space Bar in a column where carrying is required moves the question mark to the top of the column, where the student enters the digit being carried from the previous column. Actually, this process is optional. If the student refrains from pressing the Space Bar and simply enters the correct digit at the bottom of the column, the response is considered correct.

If a problem is worked correctly, a reinforcement is presented, which is either animated or text, as selected at the start of the program. ANIMATED reinforcement consists of brief animations (a clown flipping, a train moving, a dragon breathing fire) with a single word ("WOW", "GREAT") displayed. TEXT reinforcement consists of messages--"Wow!", "Wow, Student!", "Super, Student!", etc.

If an incorrect digit is entered, the computer does not wait until a problem is completed to give corrective feedback. After the first wrong digit, this feedback generally consists of the message, "XX is wrong. Try again." The student then presses Return and reenters the digit.

The student is allowed one error per multiplication problem. If a second error (including carried digits) is made, the computer announces "XX is wrong," and supplies the correct answer digit by digit.

The session continues until at least a "minimum number of problems" is presented. This number is preset at 8, but can be reset to any number from 3 to 20. The computer also has a "mastery level" and a "failure level" which are preset at 80% and 50% (respectively) but can be reset by the teacher. As long as the student performs between the mastery level and the failure level, the computer continues to present problems at a given "problem level" indefinitely.

After the "minimum number of problems" has been presented, the "problem level" will automatically increase each time the student reaches the "mastery level" or decrease if the student reaches the "failure level". These changes are announced to the student: "Good news, Student. Your problem level went up to XX. Good Job!!"; "Bad news, Student. Your problem level went down to XX. Try a little harder." An excessive number of errors will cause the session to end with a message: "Bad news, Student. You have missed too many problems. See your teacher for help."

The computer maintains a constant display of student performance at the bottom of the screen. This includes: PL = XX ("problem level"), TC = XX (total correct), TP = XX (total problems), and AVG = XX% (percent accuracy). The total correct includes problems on which the student made only one error. These totals are reset to zero when the "problem level" changes.

TEACHER OPTIONS

1. Pressing Control-I at the initial title screen will get you into the management menu to change "minimum number of problems", "mastery level" and "failure level".
2. This software has an extensive management system which assigns "problem levels" and maintains records for up to 100 students divided into up to 5 classes.
3. A session can be ended at any time by pressing the Esc (escape) key. The computer then presents a summary of performance and returns to the initial title screen.

SUGGESTIONS

1. The animated reinforcement takes very little time away from instruction and we recommend it, unless the student finds it too childish. The text reinforcement addresses the student as "STUDENT" (unless the management system is used), which may not be very appealing.

NOTE: Contrary to the message on the opening screen, do NOT press Return after selecting A or T (Animated or Text) reinforcement.

2. Be sure the student can read the message "Press RETURN to go on.", and that he/she knows to watch for it. It appears after each problem and error message, and the computer simply waits for the Return key to be pressed. Failure to respond promptly will result in wasted instructional time. This may be particularly confusing after an error, when the computer displays two conflicing messages: "Try again." and "Press RETURN to go on." In these instances, the student must press Return and then try a new answer.
3. Encourage the student to press the Space Bar to regroup. This is not really required, but it may serve as a memory aid and establish the habit of writing the carried digit in paper and pencil computations. Also, it provides an additional error monitoring step.
4. Be sure that the student understands the right-to-left sequence of entering the digits. This may be confusing. For example, in the problems: 8 and 8 x 2 = 16 the six must be entered first.

```
   8
 x 2
----
  16
```

5. D.T.A. Applications
   Warm-up
   Development (of computation skills if teacher is present to assist)
   Guided Practice
   Independent Practice
   Vocabulary: regroup

6. We suggest that you bypass the management system, and use the system in its "drill" mode. Do this in the following way: (1) Type "DRILL" when the program asks for the student's name, then select (2) "ANIMATED OR TEXT REINFORCEMENT" and (3) the "BEGINNING LEVEL".

Sequence MULTIPLICATION

roblem evel	Description	Problem Level Example
.	Multipliers 1-5 Multiplicands 1, 2, 5, 10	1. 4 × 2 = ? 2. 5 × 3 = ? 3. Review
-7	Multipliers 1-5 Multiplicands 1, 2, 3, 4, 5, 10	4. 4 × 10 = ? 5. 4 × 5 = ? 6-7. Review
-11	Multipliers 0, 6, 7, 8, 9 Multiplicands 1, 2, 5, 10	8. 9 × 10 = ? 9. 5 × 9 = ? 10-11. Review
2-15	Multipliers 0, 6, 7, 8, 9 Multiplicands 1, 2, 3, 4, 5, 10	12. 9 × 5 = ? 13. 3 × 9 = ? 14-15. Review
i-19	Multipliers 0-9 Multiplicands 1, 2, 3, 4, 5, 10	16. 9 × 5 = ? 17. 5 × 7 = ? 18-19. Review

Problem Level	Description	Problem Level Example
20-22	Multipliers 0-5 Multiplicands 6, 7, 8, 9	20. 5 × 9 = ? 21. 9 × 4 = ? 22. Review
23-25	Multipliers 0-9 Multiplicands 6, 7, 8, 9	23. 9 × 7 = ? 24. 8 × 7 = ? 25. Review
26-30	Multipliers 0-9 Multiplicands 0-10	26-27. 3 × 10 = ? 28-29. 8 × 6 = ? 30. Review
31	Multipliers 0-9 Multiplicands 10-9000 (Multiples of 10)	31. 7000 × 9 = ?
32	Multipliers 0-9 Multiplicands 10-81 No regrouping	32. 12 × 2 = ?

Sequence MULTIPLICATION

Problem Level	Description	Problem Level Example
33-35	Multipliers 0-9 Multiplicands 11-19 Some regrouping	33. 13 × 7 ? 34-35. 18 × 7 ?
36	Multipliers 0-9 Multiplicands 100-999 No regrouping	36. 123 × 3 ?
37-39	Multipliers 0-9 Multiplicands 100-999 Some regrouping	37-39. 246 × 7 ?
40-42	Multipliers 0-9 Multiplicands 1000-9999 Some regrouping	40-42. 7083 × 9 ?
43-44	Multipliers 10-90 (Multiples of 10) Multiplicands 10-99 Some regrouping	43-44. 87 × 20 ?
45-47	Multipliers 10-99 Multiplicands 10-99 Some regrouping	45-47. 46 × 23 ?
48-49	Multipliers 0-99 Multiplicands 10-99 Some regrouping	48-49. 74 × 46 ?
50	Multipliers 10-90 (Multiples of 10) Multiplicands 100-999 Regrouping	50. 347 × 20 ?

Problem Level	Description	Problem Level Example
51-52	Multipliers 10-99 Multiplicands 100-999 Some regrouping	51-52. [illegible] × [illegible] ?
53-54	Multipliers 0-99 Multiplicands 100-999 Some regrouping	53-54. 7[illegible] × [illegible] ?
55	Multipliers 10-90 (Multiples of 10) Multiplicands 1000-9999 Regrouping	55. 4566 × 40 ?
56-57	Multipliers 10-99 Multiplicands 1000-9999 Some regrouping	56-57. 5809 × 48 ?
58-59	Multipliers 0-99 Multiplicands 1000-9999 Regrouping	58-59. 7165 × 56 ?
60	Multipliers 100-900 (Multiples of 100) Multiplicands 1000-9999 Some regrouping	60. 4768 × 500 ?
61-62	Multipliers 100-999 Multiplicands 1000-9999 Regrouping	61-62. 3769 × 385 ?

SOFTWARE SUMMARY

Company: Milliken
Title: MATH SEQUENCES
Activity: MULTIPLY FRACTIONS

OBJECTIVES:

MFMT 2.1.7. Multiply a Whole Number by a Fraction [and Simplify]

SKILLS:

M1 Multiply a whole number by a fraction. MILLIKEN PROBLEM LEVELS:
FRACTIONS 28
* SEE ATTACHED PROBLEM LEVEL EXAMPLES FOR MORE INFORMATION.

ACTIVITY SUMMARY

This software provides "no frills" drill and practice on fraction problems. It is divided into "problem levels", which range from the use of "one" in multiplying fractions to multiplying mixed numbers.

Problems concerning the multiplication of a whole number by a fraction are in horizontal computation format. A question mark appears where a digit is needed. The student responds by pressing the appropriate number key (no Return key is required).

If a problem is worked correctly, a reinforcement is presented, which is either animated or text, as selected at the start of the program. ANIMATED reinforcement consists of brief animations (a wizard, a computer printing, a space ship) with a single word ("WOW", "TERRIFIC", "VERY GOOD") displayed. TEXT reinforcement consists of messages--"Wow!", "Wow, Student!", "Super, Student!", etc.

If an incorrect digit is entered, the computer does not wait until a problem is completed to give corrective feedback. After the first wrong digit, this feedback generally consists of the message, "XX is wrong. Try again." The student then presses Return and reenters the digit.

The student is allowed one error per problem. If a second error (including reducing) is made, the computer announces "XX is wrong," and supplies the correct answer digit by digit.

TEACHER OPTIONS

1. Pressing Control-I at the initial title screen will get you into the management menu to change "minimum number of problems", "mastery level" and "failure level".
2. This software has an extensive management system which assigns "problem levels" and maintains records for up to 100 students divided into up to 5 classes.
3. A session can be ended at any time by pressing the Esc (escape) key. The computer then presents a summary of performance and returns to the initial title screen.

SUGGESTIONS

1. The animated reinforcement takes very little time away from instruction and we recommend it, unless the student finds it too childish. The text reinforcement addresses the student as "STUDENT" (unless the management system is used), which may not be very appealing.

NOTE: Contrary to the message on the opening screen, do NOT press Return after selecting A or T (Animated or Text) reinforcement.

2. Be sure the student can read the message "Press RETURN to go on.", and that he/she knows to watch for it. It appears after each problem and error message, and the computer simply waits for the Return key to be pressed. Failure to respond promptly will result in wasted instructional time. This may be particularly confusing after an error, when the computer displays two conflicting messages: "Try again." and "Press RETURN to go on." In these instances, the student must press Return and then try a new answer.
3. D.T.A. Applications
   Warm-up
   Development (of computation skills if teacher is present to assist)
   Guided Practice
   Independent Practice
   Vocabulary: reduce, whole number, mixed number,
4. We suggest that you bypass the management system, and use the system in its "drill" mode. Do this in the following way:
   (1) Type "DRILL" when the program asks for the student's name, then select (2) "ANIMATED OR TEXT REINFORCEMENT" and (3) the "BEGINNING LEVEL".

The session continues until at least a "minimum number of problems" is presented. This number is preset at 8, but can be reset to any number from 3 to 20. The computer also has a "mastery level" and a "failure level" which are preset at 80% and 50% (respectively) but can be reset by the teacher. As long as the student performs between the mastery level and the failure level, the computer continues to present problems at a given "problem level" indefinitely.

After the "minimum number of problems" has been presented, the "problem level" will automatically increase each time the student reaches the "mastery level" or decrease if the student reaches the "failure level". These changes are announced to the student: "Good news, Student. Your problem level went up to XX. Good job!!"; "Bad news, Student. Your problem level went down to XX. Try a little harder." An excessive number of errors will cause the session to end with a message: "Bad news, Student. You have missed too many problems. See your teacher for help."

The computer maintains a constant display of student performance at the bottom of the screen. This includes: PL = XX ("problem level"), TC = XX (total correct), TP = XX (total problems), and AVG = XX% (percent accuracy). The total correct includes problems on which the student made only one error. These totals are reset to zero when the "problem level" changes.

Sequence FRACTIONS

Problem Level	Description	Problem Level Example
1-3	Write equivalent fraction Common factors 2-50	1-2. $\frac{3}{4} = \frac{X}{20}$ 3. $\frac{X}{6} = \frac{8}{24}$
4-5	Order of fractions Numerators 1-9 Denominators 2-12	4. $\frac{1}{9} < \frac{5}{9}$ 5. $\frac{3}{7} > \frac{3}{9}$
6-7	Order of fractions Numerators 1-12 Denominators 1-12	6-7. $\frac{2}{7} < \frac{3}{5}$
8-9	Simplify fractions Common factors 2-24	8-9. $\frac{9}{12} = X$
10-11	Change fraction to mixed numeral Numerators 5-50 Denominators 2-9	10-11. $\frac{17}{2} = X$
12-13	Change mixed number to fraction Whole numbers 2-10 Fractional numbers 1-20	12-13. $2\frac{3}{5} = X$
14	Add like fractions Numerators 0-9 Denominators 2-24 Horizontal form	14. $\frac{7}{12} + \frac{4}{12} = X$
15	Subtract like fractions Numerators 0-9 Denominators 2-24 Horizontal form	15. $\frac{8}{9} - \frac{3}{9} = X$
16	Add or subtract like fractions Numerators 0-9 Denominators 2-24	16. $\begin{array}{r}\frac{7}{8}\\ -\frac{2}{8}\\ \hline X\end{array}$

Sequence FRACTIONS

Problem Level	Description	Problem Level Example
17	Write least common denominator Numerators 1-9 Denominators 2-20	17. $\frac{1}{3} + \frac{7}{12} = X$
18	Add unlike fractions Denominators are multiples Numerators 1-9 Denominators 2-20	18. $\begin{array}{r}\frac{3}{8}\\ +\frac{1}{4}\\ \hline X\end{array}$
19	Subtract unlike fractions Denominators are multiples Numerators 1-9 Denominators 2-20	19. $\begin{array}{r}\frac{7}{10}\\ -\frac{1}{5}\\ \hline X\end{array}$
20	Write least common denominator Numerators 1-9 Denominators 2-24	20. $\frac{1}{6} + \frac{1}{8} = X$
21-22	Add unlike fractions Numerators 1-12 Denominators 2-24	21-22. $\begin{array}{r}\frac{7}{9}\\ +\frac{1}{6}\\ \hline X\end{array}$
23-24	Subtract unlike fractions Numerators 1-12 Denominators 2-24	23-24. $\begin{array}{r}\frac{7}{9}\\ -\frac{1}{6}\\ \hline X\end{array}$
25	Add unlike mixed numbers Whole numbers 1-9 Numerators 1-12 Denominators 2-20	25. $\begin{array}{r}3\frac{7}{8}\\ +5\frac{1}{6}\\ \hline X\end{array}$

Sequence FRACTIONS

Problem Level	Description	Problem Level Example
26	Subtract mixed numeral from whole number Whole numbers 1-9 Fractional numbers 2-24	26. $\begin{array}{r} 4 \\ -\,2\frac{2}{3} \\ \hline X \end{array}$
27	Subtract mixed numerals Fraction in minuend < fraction in subtrahend Whole numbers 1-9 Fractional numbers 1-24	27. $\begin{array}{r} 6\frac{5}{12} \\ -\,3\frac{7}{9} \\ \hline X \end{array}$
28	Multiply fraction by whole number Whole numbers 8-99 Numerators 1-9 Denominators 2-10	28. $\frac{3}{4} \times 20 = ?$
29	Multiply fractions Numerators 1-12 Denominators 2-24	29. $\frac{2}{3} \times \frac{5}{8} = ?$
30	Multiply mixed numeral by fraction Whole numbers 1-9 Fractional numbers 1-24	30. $2\frac{3}{4} \times \frac{7}{11} = ?$
31	Multiply mixed numerals Whole numbers 1-9 Fractional numbers 1-24	31. $1\frac{1}{2} \times 2\frac{2}{3} = ?$
32	Write reciprocals Fractional numbers 1-20	32. $\frac{8}{7} \times ? = 1$
33	Divide a whole number by a fraction Whole numbers 2-20 Fractional numbers 1-9	33. $20 \div \frac{2}{3} = X$
34	Divide fraction by a fraction Numerators 1-9 Denominators 2-24	34. $\frac{3}{4} \div \frac{5}{6} = X$
35	Divide mixed numerals Whole numbers 1-9 Fractional numbers 1-24	35. $1\frac{1}{6} \div 3\frac{2}{3} = X$
36	Change fraction to decimal Numerators 1-9 Denominators 2-12	36. Change $\frac{4}{5}$ to a decimal Type the letter of the correct answer

SOFTWARE SUMMARY

Company: Milliken
Title: Math Sequence
Activity: Percents Sequence

OBJECTIVE:

MFMT 3.1.2 RENAME FRACTIONS AS PERCENTS

Skills: P2 Rename the fraction as a percent
MILLIKEN PROBLEM LEVELS: Percent Sequence
1,3,4

MFMT 3.1.3 RENAME PERCENTS AS DECIMALS

Skills: PD3 Rename the percent as a decimal.
MILLIKEN PROBLEM LEVELS: Percent
Sequence 2,3,4.

* See attached problem level examples for more information.

ACTIVITY SUMMARY

This software program provides a "no frills" drill and practice on renaming fractions to percents and percents as decimals. It is divided into 15 "problem levels".

To begin the program the student should type the word DRILL instead of his or her name. (This would be done only if the management system is not being used.) Next, the student must choose animation or text reinforcement by pressing the letter A or T. Finally the student must select a program level from the given range.

All problems are in horizontal computation format. A question mark appears where the student should type the letter of the correct formula **GIVE EXAMPLE HERE. The student responds by pressing the appropriate letter key (no Return key is required). If the right letter is entered, the correct product is given and the text or animated reinforcement appears on the screen. ANIMATED reinforcement consists of brief animations and single words (ex. a scroll that says, "WELL DONE"; a ship with steam that says, "GREAT"; a dump truck dumping the word "WOW"). TEXT reinforcement consists of messages--"Wow!", "Wow, Student!", "Super, Student!", etc.

If an incorrect letter is entered, the program gives immediate corrective feedback. This feedback generally consists of the message, "XX is wrong. Try again." The student then presses Return and reenters a letter.

The student is allowed one error per multiplication problem. If a second error is made, the program announces "XX is wrong," and supplies the correct letter for the formula and the product.

The program maintains a constant display of student performance at the bottom of the screen. This includes: PL= XX (problem level), TC = XX (total correct), TP = XX (total problems), and AVG = XX% (percent accuracy). The total correct includes problems on which the student made only one error. These totals are reset to zero when the "problem level" changes.

TEACHER OPTIONS

1. Pressing Control-I at the initial title screen will get you into the management menu to change "minimum number of problems", "mastery level", and "failure level".
2. This software has an extensive management system which assigns "problem levels" and maintains records for up to 100 students divided into up to 5 classes.
3. A session can be ended at any time by pressing the Esc (escape) key. The program then presents a summary of performance and returns to the initial title screen.

SUGGESTIONS

1. Be sure the student can read the message "Press RETURN to go on.", and that he/she knows to watch for it. After each error the program displays two messages: "Try again," and "Press RETURN to go on." In these instances, the student must press Return and then try a new answer.
2. D.T.A. Applications
   Warm-up
   Guided Practice
   Independent Practice
3. Vocabulary: "of" means "multiplied by"
4. We suggest that you bypass the management system, and use the system in its "drill" mode. Do this in the following way: (1) Type "DRILL" when the program asks for the student's name, then (2) select "ANIMATED OR TEXT REINFORCEMENT" and (3) choose the appropriate level.

* NOTE: Contrary to the message on the opening screen, do NOT press Return after selection A or T (Animated or Text) reinforcement.

Company: Milliken
Title: Math Sequences
Activity: Simplify
Fractions

SOFTWARE SUMMARY

OBJECTIVES:

MFMT PREREQUISITE SIMPLIFY FRACTIONS

SKILLS:

R2	Reduce fractions to lowest terms MILLIKEN PROBLEM LEVELS: FRACTIONS 8-9
C2	Convert improper fraction to mixed number MILLIKEN PROBLEM LEVELS: FRACTIONS 10-11

* SEE ATTACHED PROBLEM LEVEL EXAMPLES FOR MORE INFORMATION.

ACTIVITY SUMMARY

This software provides "no frills"drill and practice on fraction problems. It is divided into "problem levels". which range from basic fraction concepts to adding mixed numbers with unlike denominators.

Problems are in both vertical and horizontal computation format. A question mark appears where a digit is needed. The students responds by pressing the appropriate number key (no RETURN key is required). If the correct digit is entered. the question mark moves left to the next place where a digit is needed (denominator position. whole number..).

If a problem is worked correctly. a reinforcement is presented. which is either animated or text. as selected at the start of the program. ANIMATED reinforcement consists of brief animations (a wizard. a computer printing. a space ship) with a single word ("WOW", "TERRIFIC". "VERY GOOD") displayed. TEXT reinforcement consists of messages--"Wow. Student,!," "Super Student", etc.

If an incorrect digit is entered. the computer does not wait until a problem is completed to give corrective feedback. After the first wrong digit. this feedback generally consists of the message, "XX is wrong. Try again." The student the presses Return and re-enters the digit.

The student is allowed one error per problem. If a second error (including reducing) is made. the computer announces "XX is wrong," and supplies the correct answer digit by digit.

The session continues at least a "minimum number of problems" is presented. This number is preset at 8. but con be reset to any number from 3 to 20. The computer also has a "mastery level" and a "failure level" which are preset at 80% and 50% (respectively) but can be reset by the teacher. As longas the student performs between the mastery level and the failure level. the computer continues to present problems at a given "problem level" indefinitely.

After the "minimum number of problems" has been presented. the "problem level" will automatically increase each time the student reaches the "mastery level" or decreases if the student reaches the "failure level". These changes are announced to the student: "Good news. student. Your problem level went up to XX. Good Job!": "Bad news student. Your problem level went down to XX. Try a little harder." An excessive number of errors will cause the session to end with a message: "Bad new Student. You have missed too many problems. See your teacher for help."

The computer maintains a constant display of student performance at the bottom of the screen. This includes PL=XX ("problem level"). TC=XX ("Total Correct). TP=XX (Total problems). and AVG=XX% (percent accuracy). The total correct includes problems on which the student made only one error. These totals are reset to zero when the "problem level" changes.

TEACHER OPTIONS

1. Pressing Control-I at the initial title screen will get you into the management menu to change "min imum number of problems". "mastery level" and "failure level".

2. This software has an extensive management system which assigns "problem levels" and maintains records for up to 100 students divided into up to 5 classes.

3. A session can be ended at any time by pressing the Esc (escape) key. The computer then presents a summary of performance and returns to the initial title screen.

SUGGESTIONS

1. The animated reinforcement takes very little time away from instruction and we recommend it. unless the student finds it too childish. The text reinforcement addresses the student as "STUDENT" (unless the management system is used). which may not be very appealing.

NOTE: COntrary to the message on the opening screen. do NOT press Return after selecting A or T (Animated or Text) reinforcement.

2. Be sure the student can read the message "Press RETURN to go on.". and that he/she knows to watch for it. It appears after each problem and error message. and the computer simply waits for the RETURN key to be pressed. Failure to respond promptly will result in wasted instructional time. This may be particularly confusing after an error. when the computer displays two conflicting messages: "Try Again." and "Press RETURN to go on." In these instances. the student must press RETURN and then try a new answer.

3. Encourage the student to press the space bar to regroup. This is not really required. but it may serve as a memory aid and establish the habit of writing the carried digit in paper and pencil computations. Also, it provides an additional error monitoring step.

4. D.T.A. Applications
   Warm-up
   Development (of computation skills if teacher is pressent to assist)
   Guided Practice
   Independent Practice
   Vocabulary: reduce

5. We suggest that you bypass the management system. and use the systemn in it's "drill" mode. Do this in the following way: (1) Type "DRILL" when the program asks for the student's name. then select (2) "ANIMATED OR TEXT REINFORCEMENT" and (3) the "BEGINNING LEVEL".

Sequence FRACTIONS

Problem Level	Description	Problem Level Example
1-3	Write equivalent fraction Common factors 2-50	1-2. $\frac{3}{4} = \frac{X}{20}$ 3. $\frac{X}{6} = \frac{8}{24}$
4-5	Order of fractions Numerators 1-9 Denominators 2-12	4. $\frac{1}{9} < \frac{5}{9}$ 5. $\frac{3}{7} > \frac{3}{9}$
6-7	Order of fractions Numerators 1-12 Denominators 1-12	6-7. $\frac{2}{7} < \frac{3}{5}$
8-9	Simplify fractions Common factors 2-24	8-9. $\frac{9}{12} = X$
10-11	Change fraction to mixed numeral Numerators 5-50 Denominators 2-9	10-11. $\frac{17}{2} = X$
12-13	Change mixed number to fraction Whole numbers 2-10 Fractional numbers 1-20	12-13. $2\frac{3}{5} = X$
14	Add like fractions Numerators 0-9 Denominators 2-24 Horizontal form	14. $\frac{7}{12} + \frac{4}{12} = X$
15	Subtract like fractions Numerators 0-9 Denominators 2-24 Horizontal form	15. $\frac{8}{9} - \frac{3}{9} = X$
16	Add or subtract like fractions Numerators 0-9 Denominators 2-24	16. $\begin{array}{r} \frac{7}{8} \\ -\frac{2}{8} \\ \hline X \end{array}$

Sequence FRACTIONS

Problem Level	Description	Problem Level Example
17	Write least common denominator Numerators 1-9 Denominators 2-20	17. $\frac{1}{3} + \frac{7}{12} = X$
18	Add unlike fractions Denominators are multiples Numerators 1-9 Denominators 2-20	18. $\begin{array}{r} \frac{3}{8} \\ +\frac{1}{4} \\ \hline X \end{array}$
19	Subtract unlike fractions Denominators are multiples Numerators 1-9 Denominators 2-20	19. $\begin{array}{r} \frac{7}{10} \\ -\frac{1}{5} \\ \hline X \end{array}$
20	Write least common denominator Numerators 1-9 Denominators 2-24	20. $\frac{1}{6} + \frac{1}{8} = X$
21-22	Add unlike fractions Numerators 1-12 Denominators 2-24	21-22. $\begin{array}{r} \frac{7}{9} \\ +\frac{1}{6} \\ \hline X \end{array}$
23-24	Subtract unlike fractions Numerators 1-12 Denominators 2-24	23-24. $\begin{array}{r} \frac{7}{9} \\ -\frac{1}{6} \\ \hline X \end{array}$
25	Add unlike mixed numbers Whole numbers 1-9 Numerators 1-12 Denominators 2-20	25. $\begin{array}{r} 3\frac{7}{8} \\ +5\frac{1}{6} \\ \hline X \end{array}$

Sequence FRACTIONS

Problem Level	Description	Problem Level Example
26	Subtract mixed numeral from whole number Whole numbers 1-9 Fractional numbers 2-24	26. $\begin{array}{r} 4 \\ -\,2\frac{2}{3} \\ \hline X \end{array}$
27	Subtract mixed numerals Fraction in minuend < fraction in subtrahend Whole numbers 1-9 Fractional numbers 1-24	27. $\begin{array}{r} 6\frac{5}{12} \\ -\,3\frac{7}{9} \\ \hline x \end{array}$
28	Multiply fraction by whole number Whole numbers 8-99 Numerators 1-9 Denominators 2-10	28. $\frac{3}{4} \times 20 = ?$
29	Multiply fractions Numerators 1-12 Denominators 2-24	29. $\frac{2}{3} \times \frac{5}{8} = ?$
30	Multiply mixed numeral by fraction Whole numbers 1-9 Fractional numbers 1-24	30. $2\frac{3}{4} \times \frac{7}{11} = ?$
31	Multiply mixed numerals Whole numbers 1-9 Fractional numbers 1-24	31. $1\frac{1}{2} \times 2\frac{2}{3} = ?$
32	Write reciprocals Fractional numbers 1-20	32. $\frac{8}{7} \times ? = 1$
33	Divide a whole number by a fraction Whole numbers 2-20 Fractional numbers 1-9	33. $20 \div \frac{2}{3} = X$
34	Divide fraction by a fraction Numerators 1-9 Denominators 2-24	34. $\frac{3}{4} - \frac{5}{6} = X$
35	Divide mixed numerals Whole numbers 1-9 Fractional numbers 1-24	35. $1\frac{1}{6} - 3\frac{2}{3} = X$
36	Change fraction to decimal Numerators 1-9 Denominators 2-12	36. Change $\frac{4}{5}$ to a decimal Type the letter of the correct answer

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Company: Milliken
Title: MATH SEQUENCES
Activity: SUBTRACT FRACTIONS

SOFTWARE SUMMARY

OBJECTIVES:

MFMT 2.1.6.Sub Mixed Numbers [and Simplify]

SKILLS:

A1 Find a common denominator or lowest common denominator
MILLIKEN PROBLEM LEVELS: FRACTIONS 17-20
A2 Rename fractions to a given denominator
MILLIKEN PROBLEM LEVELS: FRACTIONS 1-3
S3 Subtract fractions with like denominators
MILLIKEN PROBLEM LEVELS: FRACTIONS 15-16
S4 Subtract fractions with unlike denominators
MILLIKEN PROBLEM LEVELS: FRACTIONS 19, 23-24
S5 Subtract mixed numbers with like denominators
MILLIKEN PROBLEM LEVELS: FRACTIONS NONE
S6 Subtract mixed numbers with unlike denominators
MILLIKEN PROBLEM LEVELS: FRACTIONS 27

* SEE ATTACHED PROBLEM LEVEL EXAMPLES FOR MORE INFORMATION.

ACTIVITY SUMMARY

This software provides "no frills" drill and practice on fraction problems. It is divided into "problem levels", which range from basic fraction concepts to subtracting mixed numbers with unlike denominators.

Problems are in both vertical and horizontal computation format. A question mark appears where a digit is needed. The student responds by pressing the appropriate number key (no Return key is required). If the correct digit is entered, the question mark moves to the next place where a digit is needed (denomiator postion, whole number..).

If a problem is worked correctly, a reinforcement is presented, which is either animated or text, as selected at the start of the program. ANIMATED reinforcement consists of brief animations (a wizard, a computer printing, a space ship) with a single word ("WOW", "TERIFFIC", "VERY GOOD") displayed. TEXT reinforcement consists of messages--"Wow!", "Wow, Student!", "Super, Student!", etc.

If an incorrect digit is entered, the computer does not wait until a problem is completed to give corrective feedback. After the first wrong digit, this feedback generally consists of the message, "XX is wrong. Try again." The student then presses Return and re-enters the digit.

The student is allowed one error per problem. If a second error (including reducing) is made, the computer announces "XX is wrong." and supplies the correct answer digit by digit.

The session continues until at least a "minimum number of problems" is presented. This number is preset at 8, but can be reset to any number from 3 to 20. The computer also has a "mastery level" and a "failure level" which are preset at 80% and 50% (respectively) but can be reset by the teacher. As long as the student performs between the mastery level and the failure level, the computer continues to present problems at a given "problem level" indefinitely.

After the "minimum number of problems" has been presented, the "problem level" will automatically increase each time the student reaches the "mastery level" or decrease if the student reaches the "failure level". These changes are announced to the student: "Good news, Student. Your problem level went up to XX. Good job!!"; "Bad news, Student. Your problem level went down to XX. Try a little harder." An excessive number of errors will cause the session to end with a message: "Bad news, Student. You have missed too many problems. See your teacher for help."

The computer maintains a constant display of student performance at the bottom of the screen. This includes: PL = XX ("problem level"), TC = XX (total correct), TP = XX (total problems), and AVG = XX% (percent accuracy). The total correct includes problems on which the student made only one error. These totals are reset to zero when the "problem level" changes.

TEACHER OPTIONS

1. Pressing Control-I at the initial title screen will get you into the management menu to change "minimum number of problems". "mastery level" and "failure level".

2. This software has an extensive management system which assigns "problem levels" and maintains records for up to 100 students divided into up to 5 classes.

3. A session can be ended at any time by pressing the Esc (escape) key. The computer then presents a summary of performance and returns to the initial title screen.

SUGGESTIONS

1. The animated reinforcement takes very little time away from instruction and we recommend it. unless the student finds it too childish. The text reinforcement addresses the student as "STUDENT" (unless the management system is used). which may not be very appealing.

NOTE: Contrary to the message on the opening screen. do NOT press Return after selecting A or T (Animated or Text) reinforcement.

2. Be sure the student can read the message "Press RETURN to go on.". and that he/she knows to watch for it. It appears after each problem and error message. and the computer simply waits for the Return key to be pressed. Failure to respond promptly will result in wasted instructional time. This may be particularly confusing after an error. when the computer displays two conflicting messages: "Try again." and "Press RETURN to go on." In these instances. the student must press Return and then try a new answer.

3. D.T.A. Applications
   Warm-up
   Development (of computation skills if teacher is present to assist)
   Guided Practice
   Independent Practice
   Vocabulary: reduce

4. We suggest that you bypass the management system. and use the system in its "drill" mode. Do this in the following way: (1) Type "DRILL" when the program asks for the student's name. then select (2) "ANIMATED OR TEXT REINFORCEMENT" and (3) the "BEGINNING LEVEL".

Sequence FRACTIONS

Problem Level	Description	Problem Level Example
1-3	Write equivalent fraction Common factors 2-50	1-2. $\frac{3}{4} = \frac{X}{20}$ 3. $\frac{X}{6} = \frac{8}{24}$
4-5	Order of fractions Numerators 1-9 Denominators 2-12	4. $\frac{1}{9} < \frac{5}{9}$ 5. $\frac{3}{7} > \frac{3}{9}$
6-7	Order of fractions Numerators 1-12 Denominators 1-12	6-7. $\frac{2}{7} < \frac{3}{5}$
8-9	Simplify fractions Common factors 2-24	8-9. $\frac{9}{12} = X$
10-11	Change fraction to mixed numeral Numerators 5-50 Denominators 2-9	10-11. $\frac{17}{2} = X$
12-13	Change mixed number to fraction Whole numbers 2-10 Fractional numbers 1-20	12-13. $2\frac{3}{5} = X$
14	Add like fractions Numerators 0-9 Denominators 2-24 Horizontal form	14. $\frac{7}{12} + \frac{4}{12} = X$
15	Subtract like fractions Numerators 0-9 Denominators 2-24 Horizontal form	15. $\frac{8}{9} - \frac{3}{9} = X$
16	Add or subtract like fractions Numerators 0-9 Denominators 2-24	16. $\begin{array}{r} \frac{7}{8} \\ -\frac{2}{8} \\ \hline X \end{array}$

Sequence FRACTIONS

Problem Level	Description	Problem Level Example
17	Write least common denominator Numerators 1-9 Denominators 2-20	17. $\frac{1}{3} + \frac{7}{12} = X$
18	Add unlike fractions Denominators are multiples Numerators 1-9 Denominators 2-20	18. $\begin{array}{r} \frac{3}{8} \\ +\frac{1}{4} \\ \hline X \end{array}$
19	Subtract unlike fractions Denominators are multiples Numerators 1-9 Denominators 2-20	19. $\begin{array}{r} \frac{7}{10} \\ -\frac{1}{5} \\ \hline X \end{array}$
20	Write least common denominator Numerators 1-9 Denominators 2-24	20. $\frac{1}{6} + \frac{1}{8} = X$
21-22	Add unlike fractions Numerators 1-12 Denominators 2-24	21-22. $\begin{array}{r} \frac{7}{9} \\ +\frac{1}{6} \\ \hline X \end{array}$
23-24	Subtract unlike fractions Numerators 1-12 Denominators 2-24	23-24. $\begin{array}{r} \frac{7}{9} \\ -\frac{1}{6} \\ \hline X \end{array}$
25	Add unlike mixed numbers Whole numbers 1-9 Numerators 1-12 Denominators 2-20	25. $\begin{array}{r} 3\frac{7}{8} \\ +5\frac{1}{6} \\ \hline X \end{array}$

Sequence FRACTIONS

Problem Level	Description	Problem Level Example
26	Subtract mixed numeral from whole number Whole numbers 1-9 Fractional numbers 2-24	26. $\begin{array}{r} 4 \\ -\,2\frac{2}{3} \\ \hline X \end{array}$
27	Subtract mixed numerals Fraction in minuend < fraction in subtrahend Whole numbers 1-9 Fractional numbers 1-24	27. $\begin{array}{r} 6\frac{5}{12} \\ -\,3\frac{7}{9} \\ \hline X \end{array}$
28	Multiply fraction by whole number Whole numbers 8-99 Numerators 1-9 Denominators 2-10	28. $\frac{3}{4} \times 20 = ?$
29	Multiply fractions Numerators 1-12 Denominators 2-24	29. $\frac{2}{3} \times \frac{5}{8} = ?$
30	Multiply mixed numeral by fraction Whole numbers 1-9 Fractional numbers 1-24	30. $2\frac{3}{4} \times \frac{7}{11} = ?$
31	Multiply mixed numerals Whole numbers 1-9 Fractional numbers 1-24	31. $1\frac{1}{2} \times 2\frac{2}{3} = ?$
32	Write reciprocals Fractional numbers 1-20	32. $\frac{8}{7} \times ? = 1$
33	Divide a whole number by a fraction Whole numbers 2-20 Fractional numbers 1-9	33. $20 \div \frac{2}{3} = X$
34	Divide fraction by a fraction Numerators 1-9 Denominators 2-24	34. $\frac{3}{4} \div \frac{5}{6} = X$
35	Divide mixed numerals Whole numbers 1-9 Fractional numbers 1-24	35. $1\frac{1}{6} \div 3\frac{2}{3} = X$
36	Change fraction to decimal Numerators 1-9 Denominators 2-12	36. Change $\frac{4}{5}$ to a decimal Type the letter of the correct answer

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Company: Milliken
Title: Math Sequences
Activity: Subtraction

SOFTWARE SUMMARY

OBJECTIVES:

MFMT 2.1.2. Subtract Whole Numbers

SKILLS:

S1 Recall subtraction number facts
MILLIKEN PROBLEM LEVELS: SUBTRACTION 1-8, 13-21

S2 Subtract two numbers with up to 2 digits each, no regrouping
MILLIKEN PROBLEM LEVELS: SUBTRACTION 23

S3 Subtract two numbers with up to 3 digits each, no regrouping
MILLIKEN PROBLEM LEVELS: SUBTRACTION 32

S4 Subtract two numbers with up to 2 digits each, regrouping tens to ones
MILLIKEN PROBLEM LEVELS: SUBTRACTION 24-31

S5 Subtract two numbers with up to 3 digits each, regrouping tens to ones
MILLIKEN PROBLEM LEVELS: SUBTRACTION no problem levels

S6 Subtract two numbers with up to 3 digits each, regrouping hundreds to tens
MILLIKEN PROBLEM LEVELS: SUBTRACTION 33-34

S7 Subtract two numbers with up to 3 digits each, regrouping to tens OR ones
MILLIKEN PROBLEM LEVELS: SUBTRACTION 35-37

S8 Subtract two numbers with up to 3 digits each, one or two regroupings
MILLIKEN PROBLEM LEVELS: SUBTRACTION 38-43

S9 Subtract two numbers with up to 4 digits each, one to three regroupings
MILLIKEN PROBLEM LEVELS: SUBTRACTION **44-50

S10 Subtract two numbers with up to 5 digits each, one to four regroupings
MILLIKEN PROBLEM LEVELS: SUBTRACTION **51-54

** These problem levels extend beyond MFMT requirments by including problems requiring more than two regroupings

*SEE ATTACHED PROBLEM LEVEL EXAMPLES FOR MORE INFORMATION.

ACTIVITY SUMMARY

This software provides "no frills" drill and practice on subtraction problems. It is divided into "problem levels", which range from basic subtraction facts to subtracting two numbers with up to five digits each requiring one to four regroupings (borrowing).

With a few exceptions (see attached Problem Level Examples), problems are in vertical computation format. A question mark appears where a digit is needed. The student responds by pressing the appropriate number key (no Return key is required). If the correct digit is entered, the question mark moves left to the next column. Thus, digits are entered in the correct right-to-left computational sequence.

On "problem levels" requiring regrouping (borrowing), "Press space bar to regroup." is also displayed. Pressing the Space Bar in a column where borrowing is not required produces no response from the computer. Pressing the space bar when borrowing is required prompts a line that is drawn over the number where the borrowing should occur. A question mark appears on top of the column, where the student enters the new value of the digit. The question mark then appears over the number needing the borrowing and the student enters the carried number from the previous column. Actually, this process is optional. If the student refrains from pressing the space bar and simply enters the correct digit at the bottom of the column, the response is considered correct.

If a problem is worked correctly, a reinforcement is presented, which is either animated or text, as selected at the start of the program. ANIMATED reinforcement consists of brief animations and single words (a scroll that says "WELL DONE", a ship with steam that says "GREAT", a dump truck dumping the word "WOW"). TEXT reinforcement consists of messages--"Wow!", "Wow, Student!", "Super, Student!", etc.

If an incorrect digit is entered, the computer does not wait until a problem is completed to give corrective feedback. After the first wrong digit, this feedback generally consists of the message, "XX is wrong. Try again." The student then presses Return and reenters the digit.

The student is allowed one error per subtraction problem. If a second error (including carried digits) is made, the computer announces "XX is wrong," and supplies the correct answer digit by digit.

The session continues until at least a "minimum number of problems" is presented. This number is preset at 8. but can be reset to any number from 3 to 20. The computer also has a "mastery level" and a "failure level" which are preset at 80% and 50% (respectively) but can be reset by the teacher. As long as the student performs between the mastery level and the failure level. the computer continues to present problems at a given "problem level" indefinitely.

After the "minimum number of problems" has been presented. the "problem level" will automatically increase each time the student reaches the "mastery level" or decrease if the student reaches the "failure level". These changes are announced to the student: "Good news. Student. Your problem level went up to XX. Good job!!": "Bad news. Student. Your problem level went down to XX. Try a little harder." An excessive number of errors will cause the session to end with a message: "Bad news. Student. You have missed too many problems. See your teacher for help."

The computer maintains a constant display of student performance at the bottom of the screen. This includes: PL = XX ("problem level"). TC = XX (total correct). TP = XX (total problems). and AVG = XX% (percent accuracy). The total correct includes problems on which the student made only one error. These totals are reset to zero when the "problem level" changes.

TEACHER OPTIONS

1. Pressing Control-I at the initial title screen will get you into the management menu to change "minimum number of problems". "mastery level" and "failure level".

2. This software has an extensive management system which assigns "problem levels" and maintains records for up to 100 students divided into up to 5 classes.

3. A session can be ended at any time by pressing the Esc (escape) key. The computer then presents a summary of performance and returns to the initial title screen.

SUGGESTIONS

1. The animated reinforcement takes very little time away from instruction and we recommend it, unless the student finds it too childish. The text reinforcement addresses the student as "STUDENT" (unless the management system is used), which may not be very appealing.

NOTE: Contrary to the message on the opening screen, do NOT press Return after selecting A or T (Animated or Text) reinforcement.

2. Be sure the student can read the message "Press RETURN to go on.", and that he/she knows to watch for it. It appears after each problem and error message, and the computer simply waits for the RETURN key to be pressed. Failure to respond promptly will result in wasted instructional time. This may be particularly confusing after an error, when the computer displays two conflicting messages: "Try again." and "Press RETURN to go on." In these instances, the student must press Return and then try a new answer.

3. Encourage the student to press the Space Bar to regroup. This is not really required, but it may serve as a memory aid and establish the habit of writing the carried digit in paper and pencil computations. Also, it provides an additional error monitoring step.

4. Be sure that the student understands the right-to-left sequence of entering the digits. This may be confusing. For example, in the problems: 54 and 54 - 20 and the four must be entered first.

```
 54
-20
----
 34
```

5. D.T.A. Applications
   Warm-up
   Development (of computation skills if teacher is present to assist)
   Guided Practice
   Independent Practice
   Vocabulary: regroup

6. We suggest that you bypass the management system, and use the system in its "drill" mode. Do this in the following way: (1) Type "DRILL" when the program asks for the student's name, then select (2) "ANIMATED OR TEXT REINFORCEMENT" and (3) the "BEGINNING LEVEL".

Sequence SUBTRACTION

Problem Level	Description	Problem Level Example
1-3	Minuends 2-6	1. 6 − 2 = X 2. 5 − 2 X 3. Review
-6	Minuends 1-9	4. 9 − 4 = X 5. 6 − 0 X 6. Review
-8	Minuends equal 10	7. 10 − 3 X 8. 10 − 4 = X

Problem Level	Description	Problem Level Example
9-10	Sums 1-10 Missing addends	9-10. 8 + X = 10
11-12	Minuends 1-10 Missing subtrahends	11-12. 10 − X = 7
13-15	Minuends 10-13 Subtrahends 2-9	13. 12 − 5 = X 14. 12 − 8 X 15. Review

Problem Level	Description	Problem Level Example
16-17	Minuends 14-18 Subtrahends 4-9	16. 14 − 5 = X 17. 13 − 8 X
18-21	Minuends 10-18 Subtrahends 2-9	18-19. 12 − 5 = X 20-21. 11 − 5 X
22	Minuends 10-18 Subtrahends 0-9 Missing minuends No regrouping	22. X − 4 = 1
23	Minuends 20-99 Subtrahends 20-99 No regrouping	23. 44 − 23 X
24-25	Minuends 20-99 Subtrahends 2-9 Regrouping tens to ones	24-25. 31 − 8 X
26-27	Minuends 20-99 Subtrahends 21-99 Regrouping tens to ones No multiples of 10	26-27. 42 − 27 X
28	Minuends 20-90 (Multiples of 10) Subtrahends 11-89 Regrouping	28. 40 − 17 X
29-31	Minuends 20-99 Subtrahends 2-99 Regrouping	29. 37 − 8 X 30-31. 48 − 23 X

Problem Level	Description	Problem Level Example
32	Minuends 200-900 Subtrahends 100-900 No regrouping	32. 478 − 123 X
33-34	Minuends 200-999 Subtrahends 100-899 Regrouping hundreds to tens	33-34. 438 − 174 X

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Sequence SUBTRACTION

35	Minuends 200-999 Subtrahends 100-899 Regrouping hundreds to tens OR tens to ones	**35.** 481 − 137 X
36-37	Minuends 200-999 Subtrahends 20-999 Some regrouping	**36-37.** 493 − 147 X
38-39	Minuends 200-999 (No multiples of 100) Subtrahends 200-999 Regrouping twice	**38-39.** 413 − 287 X
40	Minuends 200-900 (Multiples of 100) Subtrahends 200-999 Regrouping twice	**40.** 600 − 178 X
41-43	Minuends 200-999 Subtrahends 20-999 Regrouping once or twice	**41.** 435 − 89 X **42-43.** 678 − 23 X
44	Minuends 1000-9999 Subtrahends 100-999 Regrouping 3 times	**44.** 4134 − 678 X
45-46	Minuends 1000-9999 Subtrahends 1000-9999 Regroup [illegible]	**45-46.** 7134 − 2865 X

Problem Level	Description	Problem Level Example
47	Minuends 1000-9000 (Multiples of 1000) Subtrahends 1000-8999 Regrouping 3 times	**47.** 4000 − 1355 X
48-50	Minuends 1000-9999 Subtrahends 1000-9999 Regrouping	**48-50.** 4781 − 2356 X

Problem Level	Description	Problem Level Example
51	Minuends 10,000-99,999 Subtrahends 1000-9999 Regrouping 4 times	**51.** 61472 − 8983 X
52-54	Minuends 100-99,999 Subtrahends 20-99,999 Regrouping	**52-54.** 71826 − 2437[illegible] X

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Company: MILLIKEN
Title: WORD MATH SERIES
Activity: BASIC PROBLEMS
(Lesson 1)

SOFTWARE SUMMARY

OBJECTIVES:

MFMT: THESE WORD PROBLEMS MATCH SKILLS THAT ARE RELATED TO THE OBJECTIVES BELOW. THEY DO NOT GIVE PRACTICE IN SOLVING MONEY PROBLEMS.

5.1.2 Solving Money Problems Using Addition and Subtraction
5.1.3 Solving Money Problems Using Multiplication and Division

SKILLS: KW1 SELECT KEY WORDS IN A WORD PROBLEM
KW2 SELECT AN OPERATION FROM KEY WORDS AND PHRASES.

ACTIVITY SUMMARY

BASIC PROBLEMS is a program that provides students with an opportunity to practice word problems that use the four basic operations to solve. The program offers a specific strategy to use in order to solve the problems.

Ex. 1. Read the problem.
2. Find all the numbers.
3. Choose the operation
4. Choose the numbers you need.
5. Solve the problem.

To begin the program the student should type "DRILL" instead of their name when asked: What is your name? This will give the students an opportunity to practice word problems and their progress will not be recorded in the management system. See the Milliken manual for more information about the teacher manager program.

The student should then select: A...Simple Problems or B...Complex roblems. Complex problems contain larger numbers and may include more than one operation to solve.

The student has an option to review the strategy for solving problems or not by pressing "Y" or "N".

If "Y" is selected the program executes a lesson on how to solve the word problems. The student will control the rate that this information is presented. by pressing the Space Bar to move on to the next screen.

Each screen will have the step of the strategy highlighted in large print within a box at the bottom of the screen.

If "N" is selected the program automatically goes to the main menu. There are four topics that the student can choose from. The word problems and pictures will relate to:

Ex. 1. Sports
2. Monsters
3. Wild West
4. School Life

The problems are not listed in order of difficulty. They will be either simple or complex depending on the student's choice at the initial menu.

When solving the problems the student is prompted each step of the way. A word problem is presented at the top of the screen. At the lower left. the prompt is given:

Ex. Read the problem. Enter the correct operation
A...Addition
S...Subtraction
M...Multiplication
D...Division

Type A. S. M. D. or ESC to stop.

At the lower right of the screen is the work area. Once the student enters the correct operation. they must enter the numbers into the work area. The operation format is always set up vertically for them with a blinking arrow indicating the location of the first number.

When the numbers have been entered the student is instructed to solve the problem.

If dividing, the student has an extra step before entering the quotient. After the dividend and divisor has been entered correctly, a question mark will blink in the quotient location. The student must press the Space Bar when the question mark is in the right location for the answer. The student has an option of long or short division. To choose short division they are given the cue: Press Space Bar for short division.

All answers except quotients are entered from right to left. Even basic fact answers must be entered this way.

For a correct response the student will see a picture appear in the lower left of the screen. As the student continues to make correct responses more information is added to this picture. For example a horse will pop up. then a saddle. then a rider...this will end when all the problems are completed.

After two incorrect responses at any time during the problem solving. the program will give the student the correct answer. This will occur even if there are several steps to solving the problem, such as multiplying then adding. There is no animation following a problem solved by the program.

The student is given seven problems to complete. There is no score or error analysis after the set. The student will be told:

Good job! You passed this section.
or
Oops. You did not successfully complete this section. You will have the opportunity to try again.

Press Return key to continue or ESC to quit.

They cannot repeat a section once they passed it. The problems within each section stay the same.

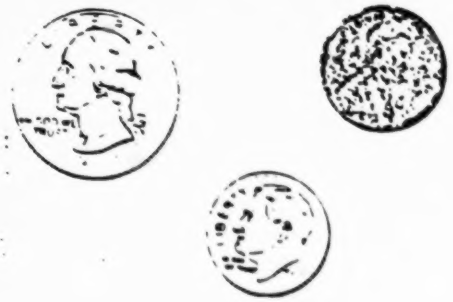
TEACHER OPTIONS

See the Milliken Word Math Manual for management options.

SUGGESTIONS

1. Use the "Drill" option instead of the teacher management program.
2. Review strategy and program commands with students before using this program.
3. Have students look for the strategy cues on the screen if there is difficulty with reading the text.
4. Consider the students reading skills before having them work independently with this program.
5. D.T.A. Applications:
   Guided Practice
   Independent Practice
   Vocabulary:
   - addition
   - subtraction
   - multiplication
   - division
   - quotient
   - problem
   - correct
   - operation
   - success
   - opportunity
   - numerals
   - regroup
   - Space Bar
   - Return
   - Escape

   See manuals for a list of the vocabulary words in the problems.
6. Pencil and paper should be used if appropriate.
7. See the program manual for further information.



SOFTWARE SUMMARY

Company: Public Domain
Title: Make Change

Objective: 5.1.5 Make Change

Skill: MC1 Identify the value of a penny, a nickel, a dime
and a quarter

ACTIVITY SUMMARY

This public domain program has the student practice the proportional values of coins.

To begin the program press the letter "A" at the main menu. The screen has clear graphics of dollars, quarters, nickles, dimes and pennies. Each problem is presented in a graphic format:

ex. = ?

As well as written:

ex. 1 Quarter = ? Nickels.

For a correct response the student is reinforced with the word Right!! and coin graphics in the amount that represent the answer appear after the number shown. The cue "Press Return to continue" appears below the feedback.

For an incorrect response the program initially responds with the words "No, type H if you need help." If a second incorrect response is entered, the program assists the student by giving the equivelent of each coin or dollar value in pennies. Ex. 1 Quarter = 8 Nickels
= 25 cents = 40 cents

The student has a total of four attempts to get the correct answer before it is given.

Help is available by pressing the "H" key anytime during the program. Each time this is done the same display is shown:

ex.

Icon of dollar bill and coins above each value.

Dollar	Quarter	Dime	Nickel	Penny
= 100 cents	=25 cents	=10 cents	=5 cents	=1 cents

At the end of ten problems a score is given.

ex. You are Finished!!!
You got 10 right out of 11 tries.
That is 91%   Again?

Pressing the Return key will bring them back to the initial menu.

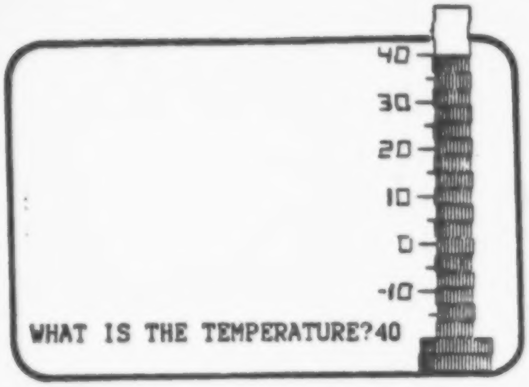
TEACHER OPTIONS

NONE

SUGGESTIONS

1. DTA: Warm Up
   Independent Practice

2. Vocabulary:Dollar
   Quarter
   Dime
   Nickle
   Penny



WHAT IS THE TEMPERATURE?40

SOFTWARE SUMMARY

Company: PUBLIC DOMAIN
Title: THERMOMETER 2

OBJECTIVES:

MFMT 2.2.1 Read Scales on Measuring Instruments
SKILL: MM2 IDENTIFY THE APPROPRIATE UNITS OF MEASURE

ACTIVITY SUMMARY

After the program has been booted, choose B, THERMOMETER 2, by typing the letter B and pressing Return. The caps lock key must be down in order for the program to operate. The student is asked to type in his/her name. Then students are given an outline of a thermometer with lines marked from -15 to 50 degrees. Numbers appear with the lines for -10, 0, 10, 20, 30, and 40. The "mercury" rises to a marked level and the student is asked "WHAT IS THE TEMPERATURE?" If the student enters an answer that is smaller than the correct answer, the feedback states, "(STUDENT NAME), YOUR NUMBER IS TOO SMALL. READ THE THERMOMETER AGAIN." The feedback comes across the screen slowly and disappears slowly so that if a student has looked away, he will not see the feedback. Instead, he will see the question "WHAT IS THE TEMPERATURE?" again. Students will be given the same item until it is answered correctly. Correct answer feedback is "VERY GOOD, (STUDENT NAME)." This feedback is even shorter so that the student may miss it if he is not paying attention. After 15 correct answers, the student is asked, "DO YOU WANT ANOTHER EXAMPLE?" If so, he will be given 15 more problems. Student records are not kept in this program. The program is in color.

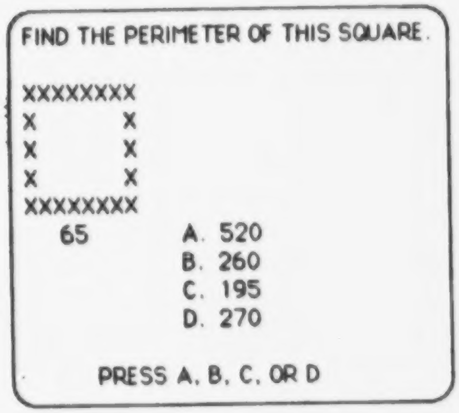
TEACHER OPTIONS

There are no teacher management options.

SUGGESTIONS

1. Make sure that students have been taught minus degrees before using the program.
2. D.T.A. Applications
    - Warm-up
    - Independent Practice
    - Vocabulary: temperature

SOFTWARE SUMMARY



```
FIND THE PERIMETER OF THIS SQUARE.

XXXXXXXX
X      X
X      X
X      X
XXXXXXXX
   65        A. 520
             B. 260
             C. 195
             D. 270

      PRESS A, B, C, OR D
```

Company: Public Domain
Title: MFMT Practice Session

OBJECTIVES:
ALL MFMT OBJECTIVES EXCEPT:
- **READ SCALES ON MEASURING INSTRUMENTS**
- **FIND ELAPSED TIME**
- **USE INFORMATION FROM GRAPHS**
- **CHOOSE A REASONABLE ANSWER** (partially addressed)

ACTIVITY SUMMARY

The Prince George's County MFMT Practice Session was written by Joyce Sewell from Douglas High School, Nina Stehman from Parkdale High School, and Charles Nowalk from Forestville High School. Numbers are randomly chosen so that students get different problems each time they use the program. The program is divided into two sections (front and back of the disk): Part I deals with Number Concepts, Whole Number Operations, Mixed Number/Fraction Operations, and Decimal Operations. Part II consists of Measurement, Using Data, and Problem Solving.

The Caps Lock key must be down in order for the program to work. Directions state that students may need paper and pencil and may take as long as necessary to do each problem. These same directions are given at the beginning of each practice session. Feedback consists of "A IS INCORRECT. THE CORRECT ANSWER IS C." or "A IS CORRECT." At the end of each session, the number of correct answers and incorrect answers is shown on the screen. Permanent record keeping is not a part of the program. After 10 problems, the student is allowed to practice more of this type, return to the same objective area, return to the beginning (main menu) or end the session.

There are a few limitations to the program due to the random numbers. In Writing Numbers in Words and Digits, there is no hyphen in the hyphenated words such as thirty-one. With Make Change, the answers are given without plural forms, for example 2 QUARTER and dollar bills are listed as 4 ONE.

Measurement has Appropriate Unit of Measure and Computing Perimeter and Area. It does not contain Read Scales on Measuring Instruments or Find Elapsed Time. Cubed units of measure are noted as MM-CUBED not mm^3. A box made up of X's represents the shaded areas of a square or rectangle for which area must be computed. Perimeter is represented with a polygon outlined in X's.

Using Data consists of Reading Tables and Computing an Average. Using Information from Graphs is not covered. In Computing an Average, some of the practice items go beyond the MFMT by using more than two-digit whole numbers to be averaged.

Problem Solving activities include Add/Subtract Money, Multiply/Divide Money, Find the Percent of a Number, Make Change, and Use a Formula. Choose a Reasonable Answer for a Mathematical Problem is addressed after the student chooses Add/Subtract Money and Make Change. However, choosing a reasonable answer for Make Change is not a part of the MFMT. Multiplication and division of money problems is a part of the Choose a Reasonable Answer, and it is not addressed here. The student is asked, "DO YOU WISH TO GIVE AN EXACT OR REASONABLE ANSWER?" If you choose to give a reasonable answer, the problems remain the same and do not state "About how much would you spend?" as they are stated on the MFMT.

TEACHER OPTIONS

There are no TEACHER OPTIONS.

SUGGESTIONS

1. Have students keep track of their scores on paper.
2. Use the MFMT Practice disk as a posttest to see if students have mastered an objective.
3. Use it as a warm-up and review just before giving the MFMT. Some teachers find that it relaxes students to work on the computer just before taking the test.
4. D.T.A. Applications
   Warm-Up
   Independent Activity

SOFTWARE SUMMARY

Company: WORLD BOOK
DISCOVERY INC.
Title: DATA HANDLER
Activity: ROUNDING OFF

OBJECTIVES

MFMT: 4.1.1. Choose a reasonable answer for a mathematical problem

SKILLS: RA1 ROUND OFF NUMBERS

ACTIVITY SUMMARY

ROUNDING OFF provides students with opportunities to identify whole numbers, and to round off to tens hundreds and thousands. Students select an activity which consists of a warm up, practice activity and a game. The student uses the Space Bar to continue after selecting the correct response. Feedback is given in the form of a change in sound (low tone) for an incorrect response. For a correct response the sound is louder and screen images flash.

Some students may experience difficulty distinguishing the feedback for a correct and incorrect response.

TEACHER OPTIONS

There are no teacher options for modifying this program.

SUGGESTIONS

1. Teacher may need to review the concepts of rounding numbers.
2. D.T.A Applications:
   Warm-up
   Independent Practice
3. See manual for further information.

Company: WORLD BOOK, INC.
Title: DATA HURDLES
Activity: TIME

SOFTWARE SUMMARY

OBJECTIVES:

MFMT: 5.1.6 FIND ELAPSED TIME

SKILLS: MET 8 FIND END TIME
MET 9 FIND ELAPSED TIME
MET 11 SELECT CORRECT PROCEDURE

ACTIVITY SUMMARY

TIME provides students with problems in either computing elapsed or ending time. They can select from Warm-Up (explanation and samples), Practice (play for no points), and Play (play for points). Warm-Up gives a short explanation of techniques used in converting between hours and minutes and its application to computing elapsed time. Sample questions, such as those used in Play are given. If students choose Play, they will be given 5 questions in multiple choice form. They will also be given a set number of points that will automatically begin decreasing. The sooner the correct answer is chosen, the more points will be kept. An incorrect answer earns no points. The total number of points accumulated is indicated at the end. Practice is similar to Play except no time or points are indicated. Optional sound can be used as reinforcement.

TEACHER OPTIONS

The teacher can decide whether to use the program with one or two students. The level of difficulty can be decided by the teacher. The teacher can also decide whether to have the student begin with Warm-Up, Practice or Play.

SUGGESTIONS

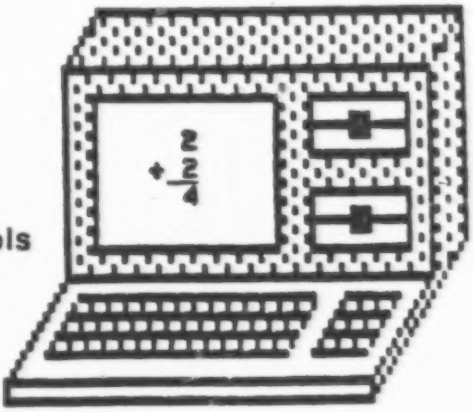
1. All students should start with the Warm-Up for at least the first time.
2. Some students may need pencil and paper.
3. The time factor of the game may be inappropriate for very slow students.
4. Have the students practice playing individually before playing in pairs.
5. D.T.A. Applications:
   Guided Practice
   Independent Practice
   Vocabulary: none
6. See manual for further information.

INTEGRATING COMPUTER SOFTWARE INTO THE FUNCTIONAL MATHEMATICS CURRICULUM: A DIAGNOSTIC APPROACH

APPENDICES

Effective Computer Instruction
for
Effective Special Education

Prince George's County Public Schools
Department of Special Education
1989



APPENDIX A

MFMT VOCABULARY LIST

The MFMT Vocabulary List is a compilation of words that might be used in the test or during instruction of concepts covered on the test. It is not necessary for students to know all of these words but it may be helpful if they are familiar with them. Actual words used on the test have an asterisk.

MFMT VOCABULARY LIST

Those words with an asterisk (*) are used on the MFMT

* %
* A.M.
* about
* add
* area
* average
* choose
* cm
* cm^2
* cm^3
* C°
* decimal
* divide
* g
* greatest
* hours
* kg
* km
* km^2
* L
* least
* m
* m^2
* minutes
* missing term
* mL
* mm
* mm^2
* multiply
* number name
* order
* P.M.
* percent
* perimeter
* rectangle
* rename
* simplify
* solve
* square
* subtract
* word name

account
addend
allowance
altogether
area units
average
balance
bar graph
budget
capacity units
cash tendered
Celsius
centimeter
circle graph
clockwise
commission
common
denominator
counterclockwise
deductions
degrees
denomination
denominator
deposit
diagonally
difference
discount
distance
dividend
divisor
down payment
earn
equally
equation
estimate
formula
gram
gross pay
horizontal
improper
interest

interval
invoice
kilogram
kilometer
length
line graph
linear units
Liter
meter
mileage
milliliter
millimeter
minuend
multiplicand
multiplier
net pay
numerator
of (multiplied by)
parentheses
partial product
product
proportion
quantity
quotient
ratio
receipt
reduce
round off
sales tax
savings
substitute
subtrahend
sum
symbol
table
temperature units
time units
title
unit price
value
variable

volume units
weight/mass units
width

APPENDIX B

STUDENT PROGRESS SHEET

The Student Progress Sheet may be used either by the student or the teacher for record keeping. Assessment scores can be kept on the sheet for the diagnostic tests and skill sheets. It may be a useful device for keeping track of individual students and the software they have been assigned to as well as the scores they are making on the software.

STUDENT PROGRESS SHEET

Pretest: ________

Diagnostic Test: ________

Posttest: ________

Student: ______________________________

Domain: ______________________________

Objective: ______________________________

Disk: ______________________________
Title Co.

Skill	Activity	Score	Date

Disk: ______________________________
Title Co.

Skill	Activity	Score	Date

Disk: ______________________________
Title Co.

Skill	Activity	Score	Date

SKILL SHEET RECORD

SKILL----->								
SCORE---->								

STUDENT PROGRESS SHEET

Student: ______________________

Domain: ______________________

Objective: ______________________

Disk: ______________________
Title Co.

Skill	Activity	Score	Date

Disk: ______________________
Title Co.

Skill	Activity	Score	Date

Disk: ______________________
Title Co.

Skill	Activity	Score	Date

sample

STUDENT PROGRESS SHEET

Student: John Doe

Domain: Whole Number Op.

Objective: 21.1 Add Whole Numbers

Disk: Addition Logician MECC
Title Co.

Skill	Activity	Score	Date
—	Pretest		
—	Diagnostic Test		
A6	Race Time		
A6	Race Time		
A6	Skill Sheet		
A7	Three in a Row		
A7	Skill Sheet		
A12	Repeat After Me		
A12	Skill Sheet		
—	Posttest		

Disk: ______________________
Title Co.

Skill	Activity	Score	Date

Disk: ______________________
Title Co.

Skill	Activity	Score	Date

APPENDIX C

COMPUTER SOFTWARE

This section contains a comprehensive listing of all the software included in the software summaries. The software listed here was chosen because it met the objectives and skills we had identified for our curriculum. We liked some software programs better than others but included them here because they were already purchased by the school system. We have also included software that meets the objectives and skills we were looking for but was limited in its ability to address the needs of special education students because nothing else was available. This part of the curriculum document should not be static. As more software and more sophisticated computers become available, this section will need to be revised.

COMPUTER SOFTWARE

LISTED BY COMPANY AND NAME OF PROGRAM

COMPANY	PROGRAM
Davidson & Associates, Inc. 3135 Kashiwa Street Torrance, California 90505 1-800-556-6141	* **Math Blaster**
Educational Activities, Inc. P.O. Box 392 Freeport, New York 11520 1-800-645-3739	**Math for Everyday Living**
Milliken Kunz, Inc. 207-209 E. Patapsco Avenue Baltimore, Maryland 21225 301-355-7220	**Math Sequences** Addition Subtraction Multiplication Division Add Fractions Subtract Fractions Multiply Fractions Simplify Fractions Add Decimals Subtract Decimals Multiply Decimals Divide Decimals Percents Sequence **WordMath I** **WordMath II**
Mindscape, Inc. 3444 Dundee Road Northbrook, Illinois 60062 1-800-221-9884	**Success with Math** (No series available at this time.) **Addition with Carry** **Subtraction** **1-2-3 Digit Multiplication** **Long Division**

Mindscape, Inc. (cont.)

Success with Math: Fraction Series

Adding Fractions
Subtracting Mixed Fractions
Multiplying Fractions
Dividing Fractions (none on MFMT)

Success with Math: Decimal Series

Adding Decimals
Subtracting Decimals
Multiplying Decimals
Dividing Decimals

Minnesota Educational
Computing Corporation (MECC)
3490 Lexington Avenue North
St. Paul, Minnesota 55126
1-612-481-3500

Addition Logician (A-125)	PGIN 7695-0021
Arithmetic Critters (A-166)	PGIN 7695-0178
Clock Works (A-168)	PGIN 7695-0180
Conquering Decimals (+, -) (A-207)	PGIN 7695-0217
Conquering Decimals (x, /) (A-208)	PGIN 7695-0218
Conquering Fractions (+, -) (A-204)	PGIN 7695-0214
Conquering Fractions (x, /) (A-205)	PGIN 7695-0215
Conquering Whole Numbers (A-201)	PGIN 7695-0203
Decimals Concepts (A-206)	PGIN 7695-0216
Fraction Concepts (A-202)	PGIN 7695-0206
Fraction Munchers (A-196)	PGIN 7695-0207
Fraction Practice Unlimited (A-203)	PGIN 7695-0208
MECC Graph (A-137)	PGIN 7695-0028
MECC Graphing Primer (A-136)	PGIN 7695-0027
Market Place, The (A-160)	PGIN 7695-0172
Money Works (A-195)	PGIN 7695-0210
Multiplication Puzzles (A-147)	PGIN 7695-0033
Number Munchers (A-170)	PGIN 7695-0181
***Quickflash!** (A-167)	PGIN 7695-0185
Quotient Quest (A-148)	PGIN 7695-0034
Space Subtraction (A-145)	PGIN 7695-0146
Speedway Math (A-169)	PGIN 7695-0186
***Study Guide** (A-126)	PGIN 7695-0022
Subtraction Puzzles (A-146)	PGIN 7695-0032
Teacher Option Organizer (A-242)	PGIN 7695-0230

Public Domain Software	Make Change Thermometer MFMT Practice Session
World Book, Inc.	Data Hurdles Time

* Specially designed data diskettes are needed for these programs. For teachers in Prince George's County Public Schools, they may be copied at William Paca Staff Development Center. For other persons, please see the instructions that accompanied this document or contact Pat Jamison at 1-301-952-6047.

APPENDIX D

SUGGESTED ASSESSMENT MODIFICATIONS

The SUGGESTED ASSESSMENT MODIFICATIONS FOR COMPETENCY TESTING OF HANDICAPPED STUDENTS TAKING THE MARYLAND FUNCTIONAL READING, MATHEMATICS, OR WRITING TESTS, OR THE TEST OF CITIZENSHIP SKILLS has been taken from Resource Paper #11, MARYLAND GRADUATION REQUIREMENTS FOR HANDICAPPED STUDENTS which is put out by the Maryland State Department of Education.

SUGGESTED ASSESSMENT MODIFICATIONS
FOR COMPETENCY TESTING OF HANDICAPPED STUDENTS* TAKING THE MARYLAND FUNCTIONAL READING, MATHEMATICS, OR WRITING TESTS, OR THE TEST OF CITIZENSHIP SKILLS

	MR	VI	DEAF	HI	SLD	SI	ED	OI	OHI
A. Scheduling Modifications: Tests may be administered									
1. At time of day most beneficial to student	X	X	X	X	X	X	X	X	X
2. Over a number of sessions, to be determined by the ARD Committee	X	X			X	X	X	X	X
3. Until, in test administrator's judgment, student can no longer sustain the activity due to physical disability or limited attention span. Additional session(s) may then be scheduled.	X				X	X	X	X	X
B. Setting Modifications: Tests may be administered									
1. Individually.	X	X	X	X	X	X	X	X	X
2. In a small group.	X	X	X	X	X	X	X		
3. In a carrel	X	X			X		X		
4. In the special education classroom.	X	X	X	X	X	X	X	X	X
5. At student's home							X	X	X
6. With student seated in front of classroom			X	X					
7. With teacher facing a student			X	X					
8. By student's special education teacher.	X	X	X	X	X	X	X	X	X
9. Using an interpreter during the time oral instruction is given to the student(s).			X	X					
C. Format and/or Equipment Modifications: Tests may be administered									
1. In large print.		X							
2. In Braille.		X							
3. With student using magnifying equipment		X							
4. With student wearing noise buffers.			X	X	X		X		
5. Using templates and/or graph paper.		X							
6. By teacher or proctor reading the test to student[1].	0	0			0			0	0
D. Recording Modifications:									
1. Student may mark answers in test booklets	X	X			X			X	X
2. Student's answer choices may be recorded or recopied by proctor or assistant	X	X			X			X	X
3. Student may mark answers by machine	X	X						X	X
4. Student may dictate response to proctor or special education teacher[2].					0			0	
5. Student may sign response to a total communication interpreter for the hearing impaired[3]			0	0					

---

*The definitions for each are: MR - (Mentally Retarded); VI - (Visually Impaired); HI - (Hearing Impaired); SLD - (Specific Learning Disability); SI - (Speech and Language Impaired); ED - (Emotionally Disturbed); OI - (Orthopedically Impaired); OHI - (Other Health Impaired).

[1] Not for use with the MFRT. Items from all other tests may be read to student, except items on the MFMT which say "choose the word name."

[2] For the MFWT only. Please read the attached "Special Procedures for a Dictated Response."

[3] For the MFWT only.

Modificat[illegible] for multihandicapped students could be selected from all of th[illegible]sted modifications, depending on the student's handicaps.

APPENDIX E

GUIDELINES FOR PARENTS

The guideline entitled "Maryland Functional Mathematics Test" was taken from Project Basic Parent Handbook put out by Prince George's County Public Schools. (See APPENDIX F.) "Parents Involved in the MFMT" was put out by Bob Reed, Mathematics Coordinator at Potomac High School. We recommend that teachers share this information with parents.

Maryland Functional Mathematics Test

The Maryland Functional Mathematics Test is divided into seven content areas or domains which identify the instructional content measured by the MFMT. These domains are: number concepts, whole number operations, mixed numbers/fractions, decimal operations, measurement, using data, and problem solving. The following list identifies the topics or types of functional math skills which belong with each domain. There is at least one example of the kind of test question which can be asked in each domain area. Test questions on the MFMT require students to select from four answer choices the one which answers the question or responds correctly to a request to perform a specific mathematical operation.

Domain 1: NUMBER CONCEPTS — Math skills — writing numbers in words and digits, renaming fractions as percents, renaming percents as decimals, and putting decimals in order.

Example: Which group of numbers is in order from least to greatest?

A. 2.0, .0.5, .007, .9
B. .9, .007, .05, 2.0
C. 2.0, .9, .05, .007
D. .007, .05, .9, 2.0

Correct answer is "D."

Domain 2: WHOLE NUMBER OPERATIONS — Math Skills — add, subtract, multiply and divide whole numbers

Example: Divide: $27\overline{)5481}$

A. 203
B. 27
C. 240
D. 23

Correct answer is "A."

Domain 3: MIXED NUMBER/FRACTION OPERATIONS — Math skills — add, subtract, and multiply mixed numbers, find a missing term in a proportion.

Example: Find the missing term: 6/8 = N/16

A. 2
B. 96
C. 12
D. 3

Correct answer is "C."

Domain 4: DECIMAL OPERATIONS — Math skills — add, subtract, multiply, and divide decimals, find a percent of a number.

Example: Solve: 5% of 495 =

A. 24.75
B. 99
C. 12
D. 3

Correct answer is "A."

Domain 5: MEASUREMENT — Math Skills — read scales on measuring instruments, find the perimeter and area of simple polygons, choose an appropriate unit of measure, find elapsed time.

Example: A roast takes 2 hours and 10 minutes to cook. If dinner is at 5:30 p.m., what time should it be put in the oven?

A. 3:40 p.m.
B. 7:40 p.m.
C. 3:20 p.m.
D. 7:20 p.m.

Correct answer is "C."

Domain 6: USING DATA — Math skills — use information from tables and graphs, and find the average of a set of numbers.

Example: Jane's basketball scores for February are:

10	24	6	12	18

Find Jane's average score.

A. 70
B. 35
C. 12
D. 14

Correct answer is "D."

Domain 7: PROBLEM SOLVING — Math skills — use simple formulaes, choose a reasonable answer, solve money problems, use percents, and make change.

Example: A baseball glove is on sale for $16.85. If you give the clerk a twenty dollar bill, what is your change?

A. four dollars, one dime, and one nickel
B. four dollars, three nickels
C. three one dollar bills, one dime, one nickel
D. three one dollar bills, one nickel

Correct answer is "C."

Metric Measures on the MFMT

There is one part of Domain 5, "Measurement" which is difficult for some students. That part is the estimation or approximation of measures, using the metric system. The following everyday concepts may be helpful in applying metric estimates of length, weight or volume.

Length or distance is measured in meters.

- A **millimeter** is about the thickness of a dime.
- A **centimeter** is about the width of your fingernail.
- A **meter** is about the width of a doorway.
- A **kilometer** is about the length of 5 city blocks.

Weight or mass is measured in grams.

- A **milligram** is about the weight of a bee's wing.
- A **gram** is about the weight of a large paperclip.
- A **kilogram** is about the weight of a pair of men's shoes.

Volume or capacity is measured in liters.

- A **milliliter** is about the amount of liquid in a full eyedropper.
- A **liter** is the capacity of a large soda bottle.
- A **kiloliter** is the capacity of a crate in which a new washing machine could be packed.

Preparing for the MFMT

Every school offers functional math instruction as part of its comprehensive mathematics program. Also, a thorough assessment of functional math skills is available in our middle schools, in both 7th and 8th grade. If you have any questions about your child's progress in functional math, please ask his/her math teacher. As parents/guardians you may provide support to your child outside the classroom by helping to identify mathematics in everyday situations.

Errors in Mathematics

It is important for your child and his/her teacher to be aware of the kinds of math errors which are made when a math problem is "wrong." Research has identified 4 major categories of errors. Students may:

1. use the wrong operation to solve a given problem (i.e., subtract rather than add).
2. make a computational error or an error in a basic number fact (i.e., 5 × 4 = 16).
3. apply the wrong procedure to solve a given problem (i.e., converting 1 hour and 10 minutes into 110 minutes, rather than 70 minutes).
4. make a random guess which has no relationship to a given problem.

Look at your child's math papers when they come home, watch him/her work math problems, talk to his/her teacher about identifying patterns of math errors, and encourage him/her to be aware of mistakes and get help to correct them. An excellent resource for providing help in functional math is **Functional Math Learning Activities,** developed by several Prince George's County math teachers. Ask your child's teacher if a copy may be loaned to you or your child. If the math teacher doesn't have a copy, she/he may request one from the school's library/media center.

PARENTS INVOLVED IN THE MFMT

YOU can help your student pass the Maryland Functional Math Test (MFMT).

See that he/she knows:

1 minute (min.) = 60 seconds (sec.)
1 hour (hr.) = 60 minutes
1 day (da.) = 24 hours
1 week (wk.) = 7 days
1 year (yr.) = 365 days
366 days (leap year)
52 weeks
12 months

METRIC UNIT:		USED TO MEASURE:
weight:	gram (g)	weigh a pencil
	kilogram (kg)	weigh a person
length:	millimeter (mm)	measure a stamp
	centimeter (cm)	measure a pencil
	meter (m)	measure a room
	kilometer (km)	measure to Baltimore
liquid measure:	milliliter (mL)	measure water in a spoon
	Liter (L)	measure water in a bathtub
area measure:	square centimeter (cm^2)	measure area of a desk
	square meter (m^2)	measure area of a room
volume:	cubic centimeter (cm^3)	measure volume of a shoe box

Can your student do these types of problems?

1. Add. 56.1 + 21.96 + 7.03
2. Subtract: 340.2 − 289.7
3. Divide: $17 \overline{)442}$
4. Multiply: 38.9 X .44
5. Rename 1/4 as a percent
6. Rename 34% as a decimal
7. Solve 6% of 796
8. Add and simplify: 8 1/2 + 4 1/6
9. Subtract and simplify: 6 7/12 − 4 1/6
10. Find the missing term: $\frac{2}{N} = \frac{6}{12}$
11. Solve for N:

$$N = \frac{V}{T} + Z$$

V = 24
T = 6
Z = 10

APPENDIX F

ADDITIONAL RESOURCES AND SUPPLEMENTARY MATERIALS

The Additional Resources and Supplementary Materials section includes materials that were used to produce this curriculum document as well as materials designed specifically for the MFMT that can supplement what has been provided here.

ADDITIONAL RESOURCES
AND
SUPPLEMENTARY MATERIALS

Computer Software

Functional Math Worksheets
Functional Math Test Generator
Copyright 1985
Functional Mathematics
Micromatics, Inc.
P.O. Box 76
Hampstead, MD 21074
(301) 239-7091

The worksheet generator produces randomly generated problems with no answers based on error patterns.

The test generator produces randomly generated multiple choice test questions with answer keys. A 62-problem test or multiple choice worksheets by domain can be produced.

NOTE: There are two areas that are not covered--choosing the correct measurement on scales and picking the most reasonable answer.

Documents

A Learning Strategies Approach to Functional Mathematics for Students with Special Needs
A Special Education Instruction Guide
Fall 1985
Harford County Public Schools
45 E. Gordon Street
Bel Air, Maryland 21014

This curriculum document addresses all of the domains and objectives on the MFMT. It provides pretests and posttests, learning strategies, teacher demonstration sheets, and drill sheets.

Functional Mathematics Learning Activities
1983
Prince George's County Public Schools
14201 School Lane
Upper Marlboro, MD 20772

PGIN 7690-0019

This guide addresses all of the domains and objectives on the MFMT. It provides student strategies, common errors, and worksheets with answer keys.

Functional Mathematics (Volume V)
Project Basic Instructional Guide, December 1981
Maryland State Department of Education
200 West Baltimore Street
Baltimore, MD 21201

This guide provides the content scope of test items on the MFMT. It gives sample test items and error patterns. Included also are instructional activities for each objective along with a sample activity

Low Stress Algorithms
Dr. L. Barton Hutchings
Francis Marion State College
Florence, South Carolina

Research has shown that students can be taught to compute rapidly and accurately using Low Stress Algorithms. The most urgent application of these algorithms is with that population of students having extreme remedial needs, including high school remedial students, those in vocational training classes, and special education students.

Miscellaneous Guides from Washington County:
Topics Covered by the Maryland Functional Math Test
MFMT: Question Format and Vocabulary
MFMT: Content Extent
MFMT: Comparison of Level I and Level II Tests
MFMT: Correlation of MFMT with Algebra and Geometry
MFMT: Applications
Washington County, MD

These guides give an easy-to-read outline of what is included in the MFMT.

Project Basic Parent Handbook
1987
Prince George's County Public Schools
Upper Marlboro, Maryland 20772

PGIN 7690-1711

This handbook acquaints parents/guardians with the functional test requirements for a high school diploma in Maryland.

Standards for Excellence in Teaching, Teacher's Edition
July 1986
Prince George's County Public Schools
Upper Marlboro, Maryland 20772

PGIN 7540-5007

The Directed Teaching Activity is covered in this guide for effective teaching.

Videotapes

Case of the Deadly Mixed Numbers (VC0118)
Case of the Fraction Action (VC0119)
Case of the Powerful Percent (VC0120)
Case of the Pony Proportions (VC0121)
Case of the Star Formula (VC0122)
Case of the Returning Tables (VC0123)
Case of the Ground-Up Graphs (VC0124)
Case of the Purposeful Polygon (VC0125)
Case of the Metric Muddle (VC0126)
Case of the Defective Decimal (VC0127)
Case of the Law of Averages (VC0128)
Case of the Money Minus Egg Roll Plus Rice (VC0129)
Case of the Divided Dollar Which Multiplied (VC0130)
Case of the Dis-Solving Problem (VC0131)
Case of the Quick-Change Artist (VC0132)
Case of the Two-Faced Clock (VC0133)

These MSDE videos can be ordered from Palmer Park for persons in Prince George's County. Others may have to get them from the State Department. The videos provide another way in which to present the math material. Some have clever songs and animation.

Computer Software: Its Use in Effective Teaching
E.C.I. for E.S.E. Project
Pat Jamison
Special Education
Prince George's County Public Schools
Upper Marlboro, Maryland 20772

This video is for teacher training. It explains the use of computer software in the effective teaching model as it applies to the Directed Teaching Activity.

APPENDIX G

MFMT LIST OF DOMAINS, OBJECTIVES, AND SKILLS

The MFMT List of Domains, Objectives, and Skills includes the domains and objectives as listed by the MSDE as well as the task analysis of skills for each objective that was done for this project.

MFMT List of Domains, Objectives, and Skills

1. NUMBER CONCEPTS

3.1.1 Write Numbers in Words and Digits

N1 Identify place value
N2 Identify word names for one through nineteen
N3 Write digits for words one through nineteen
N4 Identify word names for 20, 30, 40...90
N5 Write digits for words twenty, thirty, forty...ninety
N6 Identify hyphenated number words for 21, 22, 23...99
N7 Write digits for hyphenated number words from twenty-one through ninety-nine
N8 Identify the word names for 100 and 1,000
N9 Write the digits for hundred and thousand
N10 Identify the word names tenths and hundredths from the digits (.1 and .01)
N11 Write the digits for tenths and hundredths
N12 Recognize that "and" represents the decimal point
N13 Write numbers in words and digits

3.1.2 Rename Fractions as Percents

P1 Recall from memory 1/3 = 33 1/3% and 2/3 = 66 2/3%
P2 Rename fractions as percents

3.1.3 Rename Percents as Decimals

PD1 Identify the correct location of a decimal point
PD2 Identify the left direction
PD3 Rename percents as decimals

3.3.1 Order Decimals

OD1 Write numbers in a column according to the decimal place
OD2 Identify the smallest in a group of numbers
OD3 Arrange a group of numbers from least to greatest

2. WHOLE NUMBER OPERATIONS

2.1.1 Add Whole Numbers

A1 Recall addition number facts
A2 Add two numbers with up to 2 digits each, no regrouping
A3 Add two numbers with up to 3 or 4 digits each, no regrouping
A4 Add three 1-digit numbers
A5 Add three numbers with up to 2 digits each, no regrouping
A6 Add two numbers with up to 2 digits each, regrouping ones to tens
A7 Add two numbers with up to 3 or 4 digits each, regrouping ones to tens
A8 Add two numbers with up to 3 digits each, regrouping tens to hundreds

A9 Add two numbers with up to 3 digits each, 1 or 2 regroupings
A10 Add two numbers with up to 4 digits each, 1 to 3 regroupings
A11 Add three numbers with up to 2 digits each, regrouping
A12 Add three numbers with up to 3 or 4 digits each, regrouping

2.1.2 Subtract Whole Numbers

S1 Recall subtraction number facts
S2 Subtract two numbers with up to 2 digits each, no regrouping
S3 Subtract two numbers with up to 3 digits each, no regrouping
S4 Subtract two numbers with up to 2 digits each, regrouping tens to ones
S5 Subtract two numbers with up to 3 digits each, regrouping tens to ones
S6 Subtract two numbers with up to 3 digits each, regrouping hundreds to tens
S7 Subtract two numbers with up to 3 digits each, regrouping to tens or ones
S8 Subtract two numbers with up to 3 digits each, one or two regroupings
S9 Subtract two numbers with up to 4 digits each, one to three regroupings
S10 Subtract two numbers with up to 5 digits each, one to four regroupings

2.1.3 Multiply Whole Numbers

M1 Recall multiplication number facts
M2 Multiply 1-digit bottom number times 2-digit top number, no regrouping
M3 Multiply 1-digit bottom number times 3 or 4-digit top number, no regrouping
M4 Multiply 1-digit bottom number times 2-digit top number, regrouping
M5 Multiply 1-digit bottom number times up to 3 or 4-digit top number, regrouping
M6 Multiply 2-digit bottom number times 2-digit top number, regrouping
M7 Multiply 2-digit bottom number times up to 4-digit top number, regrouping

2.1.4 Divide Whole Numbers

D1 Recall division number facts
D2 1-digit divisor into 2-digit dividend, all sight division, no remainders
D3 1-digit divisor into 2-digit dividend, remainders possible
D4 1-digit divisor into 3-digit dividend, all sight division, no remainders
D5 1-digit divisor into 3-digit dividend, remainders possible
D6 1-digit divisor into 4-digit dividend, all sight division, no remainders
D7 1-digit divisor into 4-digit dividend, remainders possible
D8 2-digit divisor into 3-digit dividend, no remainders
D9 2-digit divisor into 2-digit dividend, remainders possible
D10 2-digit divisor into 3-digit dividend, remainders possible
D11 2-digit divisor into 4-digit dividend, remainders possible
D12 2-digit divisor into 5-digit dividend, remainders possible

3. MIXED NUMBER/FRACTION OPERATIONS

PREREQUISITES: Simplify Fractions

V1 Recognize numerator and denominator
R1 Recognize reduced and not reduced fractions
R2 Reduce fractions to lowest terms
C1 Recognize proper and improper fractions and mixed numbers
C2 Convert improper fraction to mixed number

2.1.5 Add Mixed Numbers

V1 Recognize numerator and denominator
R1 Recognize reduced and not reduced fractions
R2 Reduce fractions to lowest terms
A1 Find a common denominator or lowest common denominator
A2 Rename fractions to a given denominator
A3 Add fractions with like denominators
A4 Add fractions with unlike denominators
A5 Add mixed numbers with like denominators
A6 Add mixed numbers with unlike denominators

2.1.6 Subtract Mixed Numbers

V1 Recognize numerator and denominator
R1 Recognize reduced and not reduced fractions
R2 Reduce fractions to lowest terms
A1 Find a common denominator or lowest common denominator
A2 Rename fractions to a given denominator
S3 Subtract fractions with like denominators
S4 Subtract fractions with unlike denominators
S5 Subtract mixed numbers with like denominators
S6 Subtract mixed numbers with unlike denominators

2.1.7 Multiply a Whole Number by a Fraction

R1 Recognize reduced and not reduced fractions
R2 Reduce fractions to lowest terms
C1 Recognize proper and improper fractions and mixed numbers
C2 Convert improper fraction to mixed number
M1 Multiply a whole number by a fraction

2.1.13 Find a Missing Term in a Proportion

T1 Find the missing term in a proportion

4. DECIMAL OPERATIONS

2.1.8 Add Decimals

OD1 Write numbers in a column according to the decimal place
AD1 Add up to three numbers with one decimal place without regrouping
AD2 Add up to three numbers with one decimal place with regrouping
AD3 Add two numbers with two decimal places without regrouping
AD4 Add two numbers with two decimal places with regrouping
Z1 Recognize that with any decimal ending in zero(s), the zero(s) may be dropped

2.1.9 Subtract Decimals

- SD1 Subtract two numbers with one decimal place without regrouping
- SD2 Subtract two numbers with one decimal place with regrouping
- SD3 Subtract two numbers with two decimal places without regrouping
- SD4 Subtract two numbers with two decimal places with regrouping
- Z1 Recognize that with any decimal ending in zero(s), the zero(s) may be dropped

2.1.10 Multiply Decimals

- MD1 Identify the number of decimal places in the product
- MD2 Place the decimal point in the product correctly with up to two decimal places
- MD3 Place the decimal point in the product correctly with up to three or four decimal places
- MD4 Multiply a three digit number by a two digit number with up to two decimal places in each number
- Z1 Recognize that with any decimal ending in zero(s), the zero(s) may be dropped

2.1.11 Divide Decimals

- DD1 Place the decimal point in the quotient correctly when dividing by a whole number
- DD2 Divide a 1-digit whole number into a 2- to 4-digit number having 1 pr 2 decimal places
- DD3 Divide a 2-digit whole number into a 2- to 4-digit number having 1 or 2 decimal places
- Z1 Recognize that with any decimal ending in zero(s), the zero(s) may be dropped

2.1.12 Find a Percent of a Number

- PD3 Rename percents as decimals
- PN1 Translate "of" as "multiplied by"
- PN2 Find a percent of a number

5. MEASUREMENT

2.2.1 Read Scales on Measuring Instruments

- MM1 Recognize length, temperature, and capacity from a scale on a measuring instrument
- MM2 Identify the appropriate units of measure
- MM3 Estimate to the nearest whole unit of measure

3.2.1 Find Perimeter and Area of Simple Polygons

- MPA1 Identify a square
- MPA2 Identify a rectangle
- MPA3 Compute the perimeter of various polygons
- MPA4 Compute the areas of squares and rectangles
- MPA5 Recognize that area is always expressed in square units with an exponent of two

3.2.2 Choose an Appropriate Unit of Measure

MAU1 Identify the key words in a sentence question: linear (distance, height), area, weight/mass, capacity (liquid), volume (solid), temperature (C)
MAU2 Choose the appropriate type of unit of measure for the attribute
MAU3 Determine the relative size of what is being measured
MAU4 Choose an appropriate magnitude of the unit of measure

5.1.6 Find Elapsed Time

MET1 Identify correct time by writing hours and minutes with a colon
MET 2 Recall that 60 minutes equals 1 hour
MET3 Identify starting time, finishing time, and/or elapsed time in word problems
MET4 Subtract minutes and hours from minutes and hours, no regrouping
MET5 Subtract minutes and hours from minutes and hours, with regrouping
MET6 When the minuend is smaller than the subtrahend, add 12 hours (12:00) to the minuend
MET7 When the answer to start or end time is larger than 12:59, subtract 12:00
MET8 Find end time by adding the start time and elapsed time
MET9 Find elapsed time by subtracting start time from end time
MET10 Find start time by subtracting elapsed time from end time
MET11 Select the correct procedure for finding start, end, or elapsed time

6. USING DATA

2.3.1 Use Information from Tables

UT1 Identify information on a table
KQ1 Select key words and phrases in a question
UT2 Locate key words and phrases on a table
UT3 Find the point at which the key row and column intersect to locate data on a table

2.3.2 Use Information from Graphs

UG1 Identify information on a circle graph
UG2 Identify information on a bar graph
UG3 Identify information on a line graph
KQ1 Select key words and phrases in a question
KQ2 Select an operation from key words and phrases
UG4 Identify intervals on horizontal or vertical scales
UG5 Perform one calculation using information from a graph

5.1.1 Find the Average of a Set of Numbers

AV1 Recognize the phrase "Find the average" or "What is the average?" as requiring the two-part process of addition and division
AV2 Line up numbers in a column
AV3 Find the average of a set of numbers

7. PROBLEM SOLVING

2.1.14 Use a Simple Formula

UF1 Identify a formula
UF2 Substitute numbers for the variables in the formula
UF3 Interpret "bh" to mean b times h
UF4 Interpret "d/2" to mean d divided by 2
UF5 Compute according to the order of operations (parentheses)
UF6 Compute according to the order of operations (multiply, divide, add, subtract)
UF7 Compute according to the order of operations (fractions)

4.1.1 Choose a Reasonable Answer for a Mathematical Problem

KW1 Select key words and phrases in a word problem
KW2 Select an operation from key words and phrases
RA1 Round off numbers
RA2 Choose a reasonable answer for a mathematical problem

5.1.2 Solve Money Problems Using Addition and Subtraction

KW1 Select key words and phrases in a word problem
KW2 Select an operation from key words and phrases
MAS1 Solve money problems using addition and subtraction

5.1.3 Solve Money Problems Using Multiplication and Division

KW1 Select key words in a word problem
KW2 Select an operation from key words and phrases
MMD1 Solve money problems using multiplication and division

5.1.4 Solve Problems Using Percents

PD3 Rename percents as decimals
PN2 Find a percent of a number
MD2 Place the decimal point in the product correctly, with up to two decimal places
MUP1 Solve problems using percents

5.1.5 Make Change

MC1 Identify the value of a penny, a nickel, a dime, and a quarter
MC2 Write one-, five-, ten-, and twenty-dollar bills as $1.00, $5.00, $10.00, and $20.00
KW1 Select key words and phrases in a word problem
KW2 Select an operation from key words and phrases
MC3 Convert a sum of money into the fewest bills and coins
MC4 Solve money problems involving making change

EVALUATION OF THIS CURRICULUM GUIDE

This form is to be used by individual teachers to provide a reaction to the curriculum guide currently being used. At the end of each unit taught or after teaching from the entire document, please complete the form and send it to Assistant in Curriculum and Instruction, Department of Instructional Services. Your input is necessary in order to assess what revisions must be made in the document. Thank you for helping to review and revise your curriculum so that it is meaningful to your teaching.

- -

PGIN 7690- __________ ______________________________
Name of Document

____
Name of Unit/Chapter Evaluated

______________________ ______________
Instructional Level/Grade Level(s) Publication Date

1. In-service was received on this publication. Yes _____ No _____

2. The in-service was (adequate, inadequate) for using this document.

3. Teachers could use further in-service on the following topics/chapters/units

____

____

4. The errors/omissions noted in the document are on page(s) ______________________

____

5. The best written and most helpful sections or pages of this document are ____________

____

____

6. Information needs to be revised on the following ______________________________

____

____

7. The attached material (outline, ditto, lesson plan, etc.) should be added to the document.

____

____

8. Did the format of the guide make it easy to use? Yes ____ No ____ What changes would you like to see included?

____

____

____

9. Do the lessons contain realistic teaching time frames? Yes ____ No ____
If no, what should be changed?

____

____

10. Are there a sufficient number of teaching lessons/activities? Yes ____ No ____

11. Are there a sufficient number of available resources listed? Yes ____ No ____

12. Was the content appropriate for the level of teaching? Yes ____ No ____

13. Does the content adequately provide for Title IX (sex equality) guidelines?
Yes ____ No ____

14. Does the content adequately provide for inclusion of information about multicultural and multiracial relationships? Yes ____ No ____

15. The following suggestions would improve this document:

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Name (if desired) ______________________________

School ______________________________